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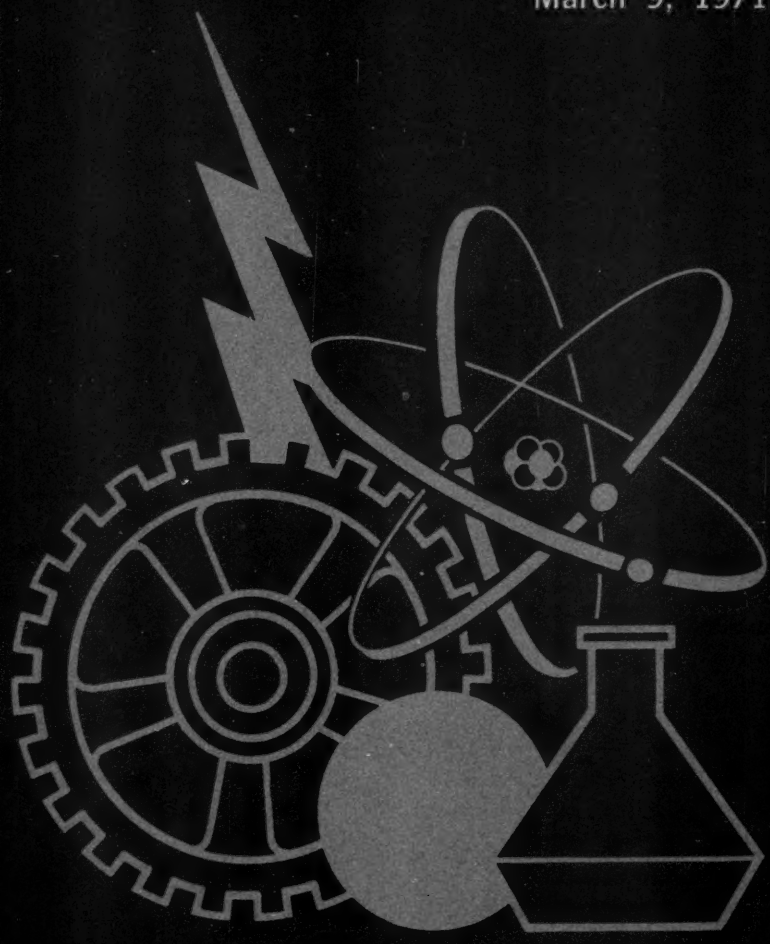
PATENTS

March 9, 1971



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

March 9, 1971 Volume 884 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

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Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Notice of Trademark Publications in February and March

Beginning Feb. 2, 1971, the OFFICIAL GAZETTE of the United States Patent Office, consisting of patent and trademark Sections, was separated into two distinct publications, the "OFFICIAL GAZETTE (Patent Section)" and the "OFFICIAL GAZETTE (Trademark Section)." Those subscribing to the OFFICIAL GAZETTE prior to the separation have received only the OFFICIAL GAZETTE (Patent Section) beginning with the date of its separation unless they requested a subscription to the OFFICIAL GAZETTE (Trademark Section). An effort was made to notify these subscribers that they would not receive the OFFICIAL GAZETTE (Trademark Section) after the separation on February 2 unless they subscribed separately to this publication. However, the notice has been misinterpreted by some former subscribers who, accordingly, have not requested a separate subscription to the OFFICIAL GAZETTE (Trademark Section) and, therefore, have not received this publication.

In view of the above, jurisdiction will be restored for all marks published for opposition on Feb. 2, 9, 16, and 23, Mar. 2, 9, and 16, 1971, to the Examiner of Trademarks and these marks will, by notice in the OFFICIAL GAZETTE (Trademark Section) of Mar. 23, 1971, be republished for opposition by reference to the OFFICIAL GAZETTE (Trademark Section) for those dates. The republication of these marks by reference will be effective as a publication in accordance with Section 12(a) of the Trademark Act of 1946 for the purpose of opposition by any person who believes he will be damaged by the registration of the mark. Oppositions to such republished marks may be filed within the time specified by Section 13 of the Statute or by Rules 2.101 and 2.102 of the Trademark Rules of Practice. Any opposition received after the original publication and on or before Apr. 22, 1971, will be deemed to have been timely filed.

In addition, all persons desiring to receive the OFFICIAL GAZETTE (Trademark Section) should contact the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402. Subscription to this publication costs $17.00 per annum. The Superintendent of Documents has advised that all persons subscribing during March will receive the previous February and March issues of the OFFICIAL GAZETTE (Trademark Section) until the excess weekly inventory of approximately 3000 copies is exhausted.

WILLIAM E. SCHUYLER, JR.,
Feb. 25, 1971. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,645,107, T. R. Smith, COMBINED WASHING MACHINE AND CENTRIFUGAL EXTRACTOR; **2,645,108,** same, COMBINED WASHING MACHINE AND CENTRIFUGAL FLUID EXTRACTOR; **Re. 25,125,** same, FLUID CONTROL SYSTEM FOR WASHING MACHINE; **Re. 25,157,** C. W. Burkland, TUB ASSEMBLY; **2,948,372,** J. D .Goodlaxson, DRIVE ASSEMBLY; **3,013,645,** same, **filed** Feb. 13, 1970, D.C., S.D. IOWA (Des Moines), Doc. 9–2473–C–1, *White Consolidated Industries, Inc. and Franklin Manufacturing Company* v. *The Maytag Company.* On stipulation, complaint and defendant's counterclaims dismissed with prejudice, Nov. 18, 1970.

2,645,108. (See 2,645,107.)

2,753,694, Trow and Nelson, ICE DISINTEGRATING AND CHIP DELIVERING SPIRAL ICE CHIP PRODUCING MACHINE, **filed** Oct. 31, 1967, D.C., N.D. Ill. (Chicago), Doc. 67c1894, *King-Seeley Thermos Co.* v. *Jefferson Ice Co.* By agreement cause dismissed without prejudice, Jan. 4, 1971.

2,790,362, Higonnet and Moyroud, PHOTO COMPOSING MACHINE; **2,968,383,** Higonnet and Grea, METHOD AND APPARATUS FOR TYPE COMPOSITION; **3,332,617,** Higonnet and Moyroud, TYPE COMPOSING APPARATUS, **filed** Dec. 22, 1970, D.C. Mass. (Boston), Doc. C.A. 70–1957–C, *Compugraphic Corporation* v. *Photon, Inc.*

2,823,775, R. E. Zwayer, HOIST MOTOR AND BRAKE CONTROL, **filed** Nov. 17, 1970, D.C., E.D. Mich. (Detroit), Doc. 35671, *Aro Corp.* v. *Mich. Pneumatic Tool, Inc. and Irving Wine.* Consent decree for permanent injunction, Dec. 11, 1970.

2,913,976, D. F. Cole, ELECTRIC BROILER; **3,091,171,** same, BROILER, **filed** Nov. 19, 1970, D.C., N.D. Ohio (Cleveland), Doc. C70–1068, *David F. Cole* v. *Sears, Roebuck & Co.*

2,925,665, T. R. Smith, CLOTHES DRIER WITHOUT CASING; **2,958,138,** A. T. Ashby, CLOTHES DRIER WITH STATIONARY COWLING; **2,958,139,** same, CLOTHES DRIER; **D. 211,602,** T. R. Smith, LAUNDRY MACHINE, **filed** Nov. 23, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2946, *The Maytag Company* v. *The Hoover Company.*

2,942,768, R. J. McCall, BOX, **filed** Dec. 8, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 70–C–1496, *Mack-Chicago Corporation* v. *Sturdi-Box Corporation.*

2,948,372. (See 2,645,107.)

2,958,138. (See 2,925,665.)

2,958,139. (See 2,925,665.)

2,958,872, F. J. Meyer, Jr., SWIMMING POOL COVER, **filed** Sept. 8, 1970, D.C.N.J. (Newark), Doc. C–1222–70, *Fred J. Meyer, Jr.* v. *Major Pool Equipment Corporation.* Notice of dismissal, Nov. 10, 1970.

2,968,383. (See 2,790,362.)

3,013,645. (See 2,645,107.)

3,091,171. (See 2,913,976.)

3,110,905, T. M. Rhodes, TUFTED PILE FABRIC COMPRISING A FLAT WOVEN SYNTHETIC PLASTIC BACKING, **filed** Nov. 6, 1970, D.C., M.D. Fla. (Tampa), Doc. 70–516–C T., *Burlington Industries, Inc.* v. *Florida Tile Industries, Inc.*

3,147,801, L. Katz, HEAT RADIATOR; **3,147,802,** same; **3,187,087,** Katz and Schweitzer, HEAT RADIATOR AND ELECTRIC CONNECTION APPARATUS FOR RECTIFIERS AND THE LIKE, **filed** Nov. 25, 1970, D.C. Del. (Newark), Doc. 4022, *Astrodyne, Inc.* v. *M & T Chemicals, Inc.*

3,147,802. (See 3,147,801.)

3,187,087. (See 3,147,801.)

3,280,770, B. F. Kwiat, AIR SUPPLY UNIT FOR BOILERS; **3,522,770,** same, AIR SUPPLY AND PREHEATING UNITS FOR BOILERS, **filed** Dec. 14, 1970, D.C. E.D. Pa. (Philadelphia), Doc. 70–3414, *B. F. Kwiat Industries, Inc. et al.* v. *Jack Adams et al.*

3,332,617. (See 2,790,362.)

3,339,366, Gogan and Joly, STRUCTURE FOR LEACHING FIELDS; **Reg. No. 900,008** (AMERATION), American Precast Corp. **filed** Nov. 25, 1970, D.C. Mass. (Boston), Doc. 70–1706–C, *American Precast Corporation* v. *Maurice Concrete Products, Inc.*

3,379,373, R. Roberts, METHOD AND MEANS FOR PRODUCING AND CONTROLLING THE DISCHARGE OF FOG, **filed** Apr. 30, 1970, D.C., E.D. Va. (Newport News), Doc. CA–71–70–NN, *Root-Lowell Manufacturing Company* v. *Continental Manufacturing Company, Inc.*

3,497,877, Diemond and Greenberg, POOL WITH INTEGRAL SLIDE; **D. 216,577,** Greenberg and Diemond, same, **filed** Nov. 27, 1970, D.C., S.D.N.Y., Doc. 70–C–5195, *General Foam Plastics Corp.* v. *Coleco Industries, Inc.*

3,522,770. (See 3,280,770.)

Re. 25,125. (See 2,645,107.)

Re. 25,157. (See 2,645,107.)

D. 211,602. (See 2,925,665.)

D. 216,577. (See 3,497,877.)

D. 217,314, J. R. Smith, MOTORCYCLE ROCKER ARM COVER, **filed** Dec. 14, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2792–DWW, *Jefferson R. Smith, doing business as Custom Cycle Engineering Co.* v. *A.E.E. Choppers, Inc.*

D. 218,106, C. M. O'Leary, BILLIARD TABLE OR SIMILAR ARTICLE, **filed** Dec. 11, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2776–CC, *Charles M. O'Leary* v. *Axel Ostergard, doing business as Ostergard Construction and Jensen Carpenter and Cabinetshop et al.*

Reg. No. 900,008. (See 3,339,366.)

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,240,528, A. Ciuffini and P. J. Williams, CONTROL FOR EXECUTIVE POSTURE CHAIR, decided Aug. 26, 1969, Interference No. 96,199, claims 1, 2, 3, 4, 5, 7 and 9.

Patent No. 3,387,735, R. F. DeMarco, METAL INSERT FOR WALL OPENINGS AND METHOD OF COMBINING THE SAME THEREWITH, decided Jan. 25, 1971, Interference No. 96,679, claims 1, 2, 4, 7 and 10.

Disclaimers

3,334,091.—*William J. Houlihan,* Mountain Lakes, N.J. SEDATIVES. Patent dated Aug. 1, 1967. Disclaimer filed Jan. 19, 1971, by the assignee, *Sandoz-Wander, Inc.*

Hereby enters this disclaimer to claims 2 through 5, inclusive, of said patent.

3,358,665.—*Thomas F. Carmichael,* Drayton Plains, and *Richard J. Maier,* Pontiac, Mich. IGNITION SYSTEM. Patent dated Dec. 19, 1967. Disclaimer filed Jan. 6, 1971, by the assignee, *Syncro Corporation.*

Hereby enters this disclaimer to claims 5, 29 and 30 of said patent.

Certificates of Correction for the Week of Mar. 9, 1971

P.P. 3,008	3,503,951	3,532,665	3,537,491	3,540,825	3,543,288	3,546,188	3,547,950
D. 219,291	3,505,295	3,532,849	3,537,560	3,540,838	3,543,472	3,546,205	3,547,958
3,372,801	3,506,972	3,533,073	3,537,977	3,540,842	3,543,703	3,546,309	3,547,995
3,395,150	3,508,028	3,533,955	3,538,001	3,541,110	3,543,778	3,546,321	3,548,011
3,429,182	3,512,844	3,533,982	3,538,005	3,541,128	3,543,873	3,546,405	3,548,036
3,445,099	3,513,118	3,534,035	3,538,043	3,541,260	3,544,006	3,546,493	3,548,050
3,446,620	3,515,786	3,534,040	3,538,083	3,541,347	3,544,123	3,546,495	3,548,099
3,455,839	3,518,629	3,534,251	3,538,109	3,541,561	3,544,163	3,546,646	3,548,158
3,458,596	3,519,283	3,534,571	3,538,133	3,541,602	3,544,267	3,546,658	3,548,331
3,468,080	3,519,955	3,534,636	3,538,152	3,541,697	3,544,283	3,546,665	3,548,774
3,471,038	3,520,852	3,534,755	3,538,230	3,541,809	3,544,306	3,546,714	3,548,963
3,472,293	3,521,046	3,534,895	3,538,364	3,542,073	3,544,363	3,546,841	3,549,081
3,483,296	3,523,282	3,535,074	3,538,385	3,542,412	3,544,487	3,546,874	3,549,124
3,484,437	3,523,333	3,535,115	3,538,965	3,542,506	3,544,636	3,547,122	3,549,157
3,486,866	3,524,461	3,535,121	3,539,434	3,542,524	3,544,656	3,547,164	3,549,184
3,487,469	3,526,675	3,535,238	3,539,488	3,542,541	3,544,777	3,547,184	3,549,301
3,489,799	3,526,701	3,535,307	3,539,501	3,542,696	3,545,138	3,547,197	3,549,308
3,491,100	3,527,817	3,535,401	3,539,502	3,542,725	3,545,436	3,547,199	3,549,381
3,491,684	3,528,424	3,535,992	3,539,521	3,542,734	3,545,464	3,547,238	3,550,051
3,492,093	3,528,935	3,536,649	3,539,633	3,542,866	3,545,532	3,547,271	3,550,523
3,494,717	3,528,956	3,536,685	3,539,648	3,542,882	3,545,619	3,547,327	3,551,052
3,499,073	3,530,176	3,536,970	3,539,860	3,542,998	3,545,826	3,547,836	3,551,135
3,501,569	3,530,736	3,536,979	3,540,097	3,543,072	3,546,015	3,547,856	3,551,391
3,502,433	3,531,253	3,537,095	3,540,358	3,543,108	3,546,017	3,547,902	3,551,435
3,503,225	3,532,541	3,537,411	3,540,796	3,543,242	3,546,178	3,547,903	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-04-69
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-08-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-09-69
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-01-69
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-07-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	5-01-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-09-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-69
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-24-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	11-14-69
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-11-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	12-04-69
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	10-01-69
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-13-69
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	2-25-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	12-24-69

Expiration of patents: The patents within the range of numbers indicated below **expire during** March 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,670,468 to 2,673,077, inclusive
Plant Patents..... Numbers 1,260 to 1,266, inclusive

DEFENSIVE PUBLICATIONS

MARCH 9, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T884,001
MEMBRANE SEPARATION

Robert O. Osborn, Snyder, and Daniel T. Meloon, East Amherst, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 659,887, Aug. 11, 1967. This application Dec. 30, 1968, Ser. No. 800,314
Int. Cl. B01d *13/00*
U.S. Cl. 210—23
No Drawing. 11 Pages Specification

A process for separating substances from aqueous mixtures by contacting an aqueous feed mixture with one side of an acrylonitrile polymer gel film membrane under permeation conditions and recovering from the opposite side of the gel film a permeated portion of said aqueous mixture containing a reduced amount of said substances. The gel film can be formed of homopolymer or copolymer of acrylonitrile wherein the acrylonitrile content is at least 75 percent by weight with the remaining portion of the copolymer comprising monomers copolymerizable with acrylonitrile; the polymer should have an intrinsic viscosity of at least 0.5 and the gel film should have a density of from 0.45 to 1.10 grams per cubic centimeter.

This process may be effectively utilized in areas such as dialysis, for example hemodialysis wherein the content of substances such as creatinine, uric acid and urea is reduced in the recovered permeated blood; and ultrafiltration, for example filtration of microorganisms from water wherein such contaminants are removed from the water as it passes through the gel film membrane.

T884,002
TRUNK MAT FOR AUTOMOBILES

Charles L. King, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1969, Ser. No. 852,942
Int. Cl. B32b *3/26, 7/02*
U.S. Cl. 161—160
No Drawing. 6 Pages Specification

An improved trunk mat for automobiles comprising:

(1) a first layer of a fabric which permits wicking when in contact with water,

(2) a core layer of a foam sheet of a polymer having a work-to-break value of at least 10,000 in.-lbs./in.^{3}, the foam sheet consisting essentially of polyhedral shaped closed cells whose median diameter is at least 500 microns, the foam sheet having a maximum density of 0.03 gram/cc. and a specific work-to-tear value of at least 250 in.-lbs./in.^{2}, and

(3) a layer of thermoplastic film, the several layers being bonded to each other in the order specified to form a unitary laminar structure.

The laminated mat has the following pictorial structure:

Top layer—Thermoplastic film
Core—Foam
Bottom layer—Fabric

T884,003
ORIENTED FOAM LAMINAR STRUCTURES

Leon Edward Wolinski, Buffalo, N.Y., and Roland G. Harris, Chadds Ford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 7, 1969, Ser. No. 864,546
Int. Cl. B32b *3/12*
U.S. Cl. 161—161
No Drawing. 15 Pages Specification

Laminar structures comprising a core of oriented closed cell styrene polymer foam having specific elongation and tensile modulus, the core having thermoformable thermoplastic films bonded to the surfaces thereof, wherein the film bonded to a first side of the core comprises at least about 75% polystyrene and the thermoplastic film bonded to the second side of the core comprises at least about 75% polyvinyl chloride.

T884,004
PROCESS FOR PROMOTING ADHESION BETWEEN POLYOLEFINS AND VARIOUS SUBSTRATES

Charles H. Coney, 2008 Canterbury Road, and John R. Gossett, Jr., 2116 Glen Burn Road, both of Kingsport, Tenn. 37660

Filed Apr. 20, 1970, Ser. No. 30,249
Int. Cl. C08g *17/08;* B32b *27/28*
U.S. Cl. 260—29.2
No Drawing. 19 Pages Specification

A method of promoting adhesion between the surfaces of substrates such as aluminum foil, cellophane, paper, polyester and the like and the surface of a polyolefin substrate such as polyethylene or polypropylene to which the first mentioned substrates do not normally adhere. This involves coating the substrate surface with a water-dispersible polyester primer dispersed in an aqueous medium followed by drying. The adhesion producing polyester primer is derived from monomer components which include dicarboxylic acid, hydroxycarboxylic acid, aminocarboxylic acid, aminoalcohol, glycol, diamine or combinations of such monomer components wherein at least a part of the total of all such monomer components is a poly(ethylene glycol), and at least a part of said total is one or more of said monomer components substituted with one or more sulfonate metal salt groups. The aqueous dispersion of the polyester primer may be applied to either the polyolefin surface or to the surface of the substrate to be adhesively joined thereto. The invention also involves the use of the polyester primer itself as an ingredient of printing inks to adapt such inks to be permanently printed on polyolefin sheet material such as that composed of polyethylene or polypropylene.

T884,005
FOIL-FOAM LAMINAR STRUCTURES

Leon Edward Wolinski, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1970, Ser. No. 33,913
Int. Cl. B32b *3/12*
U.S. Cl. 161—161
No Drawing. 13 Pages Specification

A laminar structure comprising a core of oriented closed cell styrene polymer foam of specific elongation and ten-

sile modulus having thermoformable thermoplastic film and metal foil bonded to a first and second surface of the core, respectively.

T884,006
HEAT PROCESSABLE SILVER HALIDE EMULSIONS WITH SOLARIZATION CHARACTERISTICS
George F. L. Wood, Kodak Park, Rochester, N.Y. 14650
Filed July 27, 1970, Ser. No. 58,641
Int. Cl. G03c *1/28, 5/32*
U.S. Cl. 96—108
No Drawing. 10 Pages Specification

There are disclosed radiation-sensitive direct positive gelatino silver halide emulsions in which the silver halide grains have trivalent metal ions such as antimony, bismuth, arsenic, gold, iridium, or rhodium, on the inside thereof. The silver halide grains are formed by adding a trivalent metal ion at an advanced stage of the precipitation, i.e., at a time when grain growth has proceeded to at least about one half of the ultimate average grain diameter. This results in the formation of a grain having the trivalent metal ion closer to the surface of the grain than it would be if the trivalent metal compound had been added at the beginning of the precipitation.

Such emulsions are used in photographic systems having a halogen acceptor contiguous to the trivalent metal containing silver halide grains. This system is exposed to an image, the exposed coating is heated to a high temperature to repress subsequent photodevelopment of the non-exposed areas, and the coating is then photodeveloped, a direct positive silver image resulting due to solarization or reversal of the emulsion.

There is also disclosed in conjunction with such photographic systems the use of positive hole-trapping sensitizing dyes to enhance the solarization effect. Examples of such dyes are 3-carboxymethyl-5-[(2-thiazolidinylidene)-1-methylethylidene]-rhodanine, 3-ethyl-5-[(3-ethyl-2-benzothiazolinylidene) - 1 - methylethylidene]-2-thio-2,4-oxazolidinedione, and 3-ethyl-5-(1-ethyl-4(H)-pyridylidene)-rhodanine.

The silver halide emulsions and elements described may contain dispersing agents, coating aids, plasticizers, sensitizing dyes, hardeners, and other suitable addenda such as described in U.S. Pat. 3,447,927 of Bacon and Barbier, issued June 3, 1969.

T884,007
BULK YARN AND PROCESS
Donald Bowker Cook, R.D. 1, Box 126, Hockessin, Del. 19707
Filed July 30, 1970, Ser. No. 59,714
Int. Cl. D02g *3/04, 3/24*
U.S. Cl. 57—140
No Drawing. 6 Pages Specification

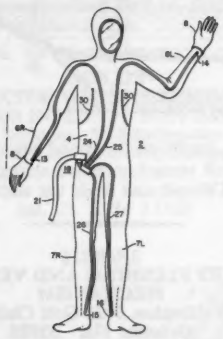
The bulk level of a twist-set, nylon, carpet yarn spun and twisted from blended, crimped staple fibers of different deniers is increased without loss of tuft definition by setting the crimp in about half of the fibers while in the form of crimped tow. Usually, the fibers in one or more but not all deniers are crimp-set. About half of the blend is of fibers with a common denier per filament of less than 15 and best results have been achieved by setting the crimp in only that group of fibers.

PATENTS

GRANTED MARCH 9, 1971

GENERAL AND MECHANICAL

3,568,209
PROTECTIVE SUIT APPARATUS
Wilber J. O'Neill, Severna Park, and Alan R. Krasberg, Crownsville, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 14, 1966, Ser. No. 579,425
Int. Cl. B63c *11/03*
U.S. Cl. 2—2.1 **6 Claims**



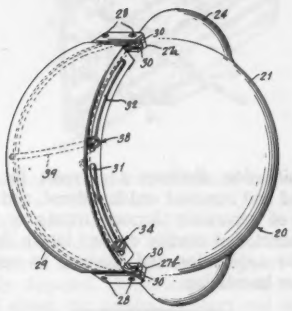
Diver's wet suit includes apertures at the wrist and ankle portions thereof, with a baffle located behind each aperture. Warm water is supplied to a distributor including a manifold section having conduits connected thereto and to the respective apertures whereby heated water by virtue of the baffles is directed toward the hand and feet extremities of the diver. The distributor includes a quick disconnect feature for emergency situations and a valve section for diverting the heated water to the ambient medium in which the diver is working.

3,568,210
PROTECTIVE HEADGEAR
Michael T. Marietta, 1806 Main St., Dallas, Tex. 75201
Filed Oct. 10, 1968, Ser. No. 766,514
Int. Cl. A42b *3/02*
U.S. Cl. 2—3 **1 Claim**

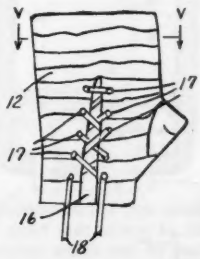
A customized protective helmet including a rigid outer shell of standard size and fitted with a specific sized cushioning head form with fastening means securing the head form to the shell.

3,568,211
DOUBLE VISOR HELMET
James Joseph Petruzella, Jr., Carbondale, Pa., assignor to Gentex Corporation, Carbondale, Pa.
Filed July 24, 1969, Ser. No. 844,468
Int. Cl. A42b *3/00*; A61f *9/04*
U.S. Cl. 2—6 **14 Claims**

A rigid protective helmet having a cover secured to a shell to define a recess for receiving first and second adjustable visors each movable independently of the other along a path between an eye-shielding position and a retracted position, each visor being controlled by a manually operable visor slider element. Each slider element projects outwardly from the visor through a slot in the cover and terminates in a control knob movable along the slot. Linking means connects each slider element to the visor at an upper central locality thereof. As the slider element is moved along the slot in one direction the visor is caused to move downwardly from a retracted position to an eye-shielding position and when the slider element is moved along the slot in the other direction the visor is moved from an eye-shielding position to a retracted position.

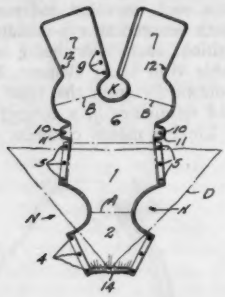


3,568,212
PERMANENT HAND BANDAGE FOR BOXERS
Ronald Seaborn, 909 E. 173rd St., New York, N.Y. 10032
Filed May 2, 1969, Ser. No. 821,298
Int. Cl. A41d *13/10*
U.S. Cl. 2—18 **6 Claims**



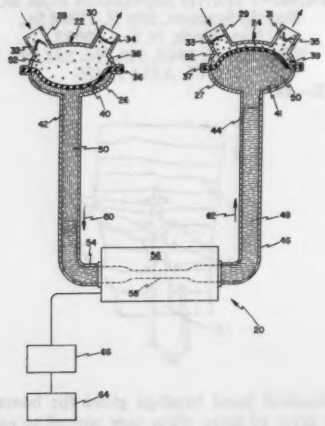
A permanent hand bandage glove for boxers includes an inner layer of large white tape wound to extend from the wrist to the knuckles, leaving the fingers free. Five or six layers of white gauze extend all over the sticky surface of the tape. A strip of foam rubber or rubber sponge extends over the knuckles of the user and is covered by one or two additional layers of gauze. The bandage is covered by an outer layer of large white tape which, along with gauze, also extends between the fingers. The bandage has an elongated opening upon the side covering the inner surface of the hand. This opening may be closed by strings extending through eye-holes.

3,568,213
INFANT'S GARMENT
Elizabeth J. Mason, University City, Mo., assignor to Trimfoot Company, St. Louis, Mo.
Filed Sept. 24, 1968, Ser. No. 761,907
Int. Cl. A41d 11/00
U.S. Cl. 2—80 2 Claims



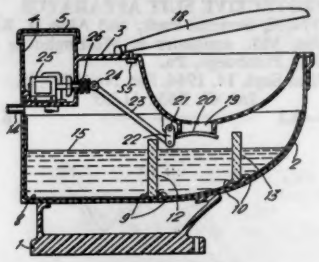
This specification discloses a garment for an infant easily applied and removed and laundered, and having the appearance of separately formed trunks or pants and blouse or jacket, but readily opened into a flat continuous sheet for application and removal to and from an infant and for laundering.

3,568,214
ARTIFICIAL HEART SYSTEM AND METHOD OF PUMPING BLOOD BY ELECTROMAGNETICALLY PULSED FLUID
Fabio R. Goldschmied, Salt Lake City, Utah, assignor to University of Utah
Filed July 24, 1968, Ser. No. 747,394
Int. Cl. A61f 1/24
U.S. Cl. 3—1 8 Claims



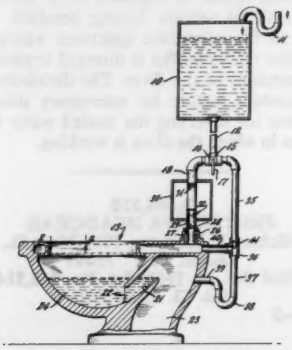
An artificial heart system including method and apparatus, the apparatus comprising, preferably, two interconnected ventricles, each internally provided with an accumulator diaphragm which is, according to the method, serially flexed in response to pulsatile displacement of electrically conductive fluid other than blood, the displacement being developed by an electromagnetic fluid driving device powered by thermoelectrically derived electrical energy.

3,568,215
TOILET AND SEWAGE TREATMENT APPARATUS
Rogers Riedel, Robert W. Norris, and Anthony Lepore, Belleville, Ontario, Canada; said Norris assignor to William E. Browning, Kingston, Ontario, Canada
Filed Jan. 27, 1969, Ser. No. 794,036
Claims priority, application Canada, Feb. 2, 1968, 11,446
Int. Cl. E03d 1/00
U.S. Cl. 4—10 4 Claims



A compact, combined toilet and sewage treatment apparatus in which sewage is treated electrolytically and excess fluids are evaporated from the electrolyte.

3,568,216
TOILET FLUSHING AND VENTING MECHANISM
Joe M. Valdespino, 5023 Golf Club Parkway, Orlando, Fla. 32808
Filed Apr. 4, 1969, Ser. No. 813,447
Int. Cl. E03d 9/05
U.S. Cl. 4—72 2 Claims

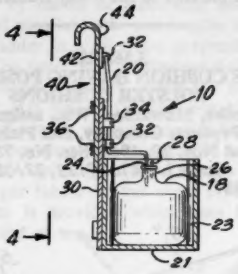


Apparatus using a single selectively operated valve for flushing a toilet bowl or exhausting odors therefrom and including a reservoir having a supply of liquid under pressure for flushing or venting the bowl.

3,568,217
COLLECTION DEVICE FOR WHEEL CHAIRS
Gertrude Anderson, 1236 Virginia Ave., Bronx, N.Y. 10473
Filed Sept. 10, 1968, Ser. No. 758,826
Int. Cl. E03d 13/00
U.S. Cl. 4—110 5 Claims

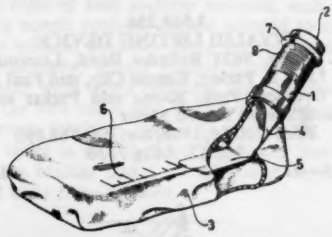
This invention relates to collection apparatus for an invalid chair which includes a back frame and a seat frame, both connected to a supporting frame. The collection apparatus comprises support plate means for adjustably attaching the support plate means to the frame, box-like reservoir holding means on the plate means, and to the reservoir and to the plate means for facilitating a reservoir detachably replaceably supported by the reser-

voir holding means. A collection tube is detachably secured delivery of fluid excretions to the collection reservoir and



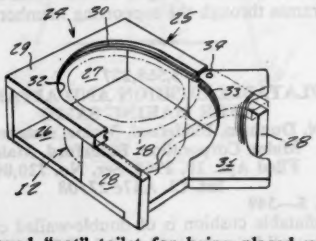
valve means for controlling flow of fluid through said tube is secured to the plate means.

3,568,218
URINE COLLECTOR WITH FLEXIBLE CONTAINER AND INTERNAL SUPPORT
Elsa G. K. A. Beckman, Wittstocksgaten 2, Stockholm NO, Sweden, and Lars W. Othén, Helenelund, Sweden; said Othén assignor to said Beckman
Filed Oct. 29, 1968, Ser. No. 771,558
Int. Cl. E03d *13/00*
U.S. Cl. 4—110 **13 Claims**



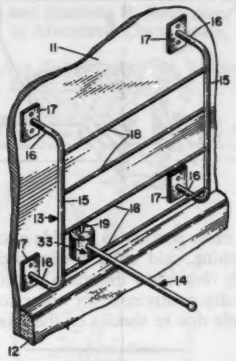
A disposable urine container particularly for patients in beds which eliminates complicated cleaning procedures; which does not present any risk of leakage and nevertheless can be stored until an inspection (such as measuring) of its contents has been performed. To achieve this the device has a supporting means that is rather stiff in relation to the container in the device, said supporting means adapted, at the deposition of the device on a firm base, to rest against this base and at the same time locate the opening of the inlet channel to the container at a level above the liquid level in the container.

3,568,219
SUPPORT AND HOLDER FOR CHILDREN'S TOILET
Shephard Roberts, P.O. Box 136, Brevoort Station, Brooklyn, N.Y. 11216
Filed July 5, 1968, Ser. No. 742,791
Int. Cl. A47k *11/02*
U.S. Cl. 4—134 **1 Claim**



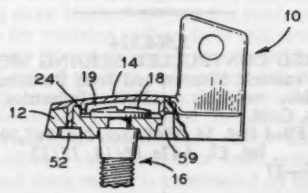
An improved "pot" toilet for being placed upon the seat of an infant's high chair or the like; the toilet including a bowl removably supported on a frame.

3,568,220
ADJUSTABLE SUPPORT BAR
Georgie Dees, 30 Gilbert St., Hampton, Va. 23369
Filed Sept. 11, 1968, Ser. No. 758,928
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 **7 Claims**



A vertical support rod interconnected in spaced, parallel relation with a wall surface and carrying an adjustable support bar pivotally connected thereto for swinging movement in a horizontal plane. The means for interconnecting the support rod and the adjustable support bar includes a vertically disposed, cylindrical element concentrically positioned about the vertical support rod and provided with a plurality of radially spaced, peripheral recesses, as well as a longitudinally moveable elongated element selectively positionable in certain of these recesses to maintain the adjustable support bar in certain preselected positions. The means for interconnecting the vertical support rod with the wall surface may include other horizontally and vertically disposed support rods graspable by the human hand.

3,568,221
HINGE ASSEMBLY
Ioakim Haldopoulos, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Apr. 9, 1969, Ser. No. 814,669
Int. Cl. A47k *13/12*
U.S. Cl. 4—240 **10 Claims**

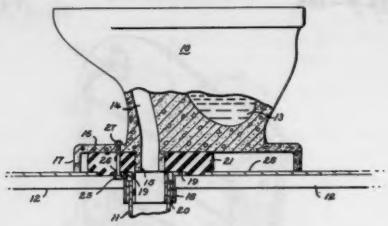


A hinge, particularly of the type employed in securing toilet seats, and toilet seat covers to toilets, is provided with a cover member which can be readily removed for access to a screw, but which is designed so as to minimize the chance of its being inadvertently dislodged from its assembled position.

3,568,222
SEALING MEMBER
Robert W. Gantzert, 205 Cleveland Ave., San Jose, Calif. 95128
Filed Dec. 16, 1968, Ser. No. 784,092
Int. Cl. E03d *11/00*
U.S. Cl. 4—252 **3 Claims**

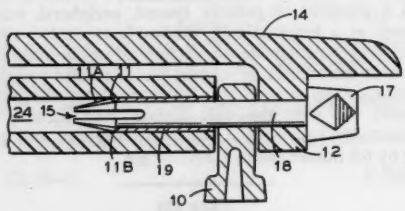
A sealing member for a toilet bowl and its connected waste pipe extending through an opening in a floor com-

prising a unitary body of resilient material defined by an annular main portion to provide a seal between the outlet of the toilet bowl and the waste pipe, an inner portion projecting from the main portion into the waste pipe to form an inner sleeve therefor, and an outer portion sur-



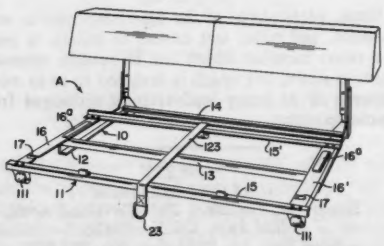
rounding the main portion to provide another seal around said floor opening, said outer portion being of a relative thickness with respect to the main portion to allow it to be further easily compressed in order to withstand relative movements due to shocks or the like.

3,568,223
HINGE ASSEMBLY
Ioakim Haldopoulos, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Feb. 24, 1969, Ser. No. 801,593
Int. Cl. A47k *13/12*
U.S. Cl. 4—236 **13 Claims**



A hinge, particularly of the type employed in securing toilet seats, and toilet seat covers to toilets, is provided with spring action pin which can be removed for easy disassembly of the unit.

3,568,224
DIVAN-BED CONTROLLED SLIDING MOVEMENT
John T. Venaleck, Mentor, and John Perricone, Thompson, Ohio, assignors to Rusco Industries, Inc., Los Angeles, Calif.
Filed Oct. 14, 1968, Ser. No. 767,397
Int. Cl. A47c *17/14, 17/22*
U.S. Cl. 5—17 **6 Claims**

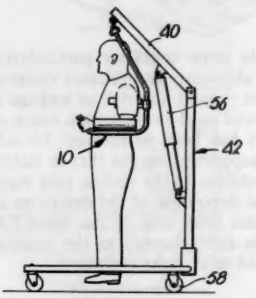


An extendable diven-bed structure comprising a fixed lower frame, a movable upper frame, and a gear and roller means engaging both the lower frame and the upper frame and other guide means position the upper frame to allow positive forward and reverse movement of the upper frame while retained parallel to the lower frame.

3,568,225
VEHICLE CUSHION HAVING POSITIONABLE BOLSTER CUSHIONS
Arthur O. Radke, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 29, 1968, Ser. No. 780,109
Int. Cl. A47c *27/22, 27/02*
U.S. Cl. 5—357 **9 Claims**

A vehicle seat cushion having a main cushion and bolster cushions swingably positionable against said main cushion, in order to vary the contour of the vehicle cushion to allow a more comfortable ride in a vehicle traveling transversely across a sloping surface.

3,568,226
INVALID LIFTING DEVICE
James E. Mater, 9621 Belinder Road, Leawood, Kans. 66206, Leon L. Parker, Kansas City, and Paul D. Gernhardt, Overland Park, Kans.; said Parker and Gernhardt assignors to to said Mater
Filed Oct. 16, 1968, Ser. No. 768,093
Int. Cl. A61g *7/10*
U.S. Cl. 5—81 **10 Claims**

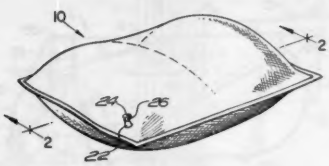


A lifting device for invalids has a pair of pivotally interconnected invalid-supporting frames. Each of the frames has a generally horizontal section adapted to support the arms of an invalid and a supporting member, the members being disposed to underlie and support the shoulders so that the weight of the invalid is carried by the frames through the supporting members.

3,568,227
INFLATABLE CUSHION AND APPARATUS FOR MAKING SAME
Philip N. Dunham, Biddeford, Maine, assignor to Philips Maine Corporation, Biddeford, Maine
Filed Apr. 10, 1968, Ser. No. 720,093
Int. Cl. A47c *27/08*
U.S. Cl. 5—349 **3 Claims**

An inflatable cushion is of double-walled construction, the inner wall being a bladder of flexible, imperforate and heat-sealable material, such as polyethylene, and the outer wall, in the preferred mode, being a non-woven paper

fabric bonded to the bladder only about the selvedge of the bladder. The bladder is formed with at least two interconnecting cells by means of transverse spot seals. The bladder is pleated parallel to the cell lengths to shorten the length of the bladder in a direction perpendicular to the spot seal line. The outer skin is dimensioned to fit over the shortened bladder whereby, when the bladder is inflated, the outer skin fits snugly over the bladder in all directions. The two walls provide counter forces of compression and tension when weight is applied to the cushion. By employing low-cost polyethylene for the bladder and a non-woven paper fabric on the outer layer a very inexpensive cushion is provided which may be discarded after a short period of use.



An apparatus for manufacturing the cushion includes a pair of rolls of heat sealable material, such as polyethylene, a nozzle applying station adapted to attach air nozzles at selected positions along the web which is indexed horizontally, a heat sealing roll to join the two superimposed webs along heat seal lines, pleating guides to gather the web and a pair of oppositely mounted rolls of non-woven fabric to apply the outer skin. Another heat seal roller is provided for marginally bonding the fabric to the bladder and a cut off station separates the completed units from the web.

3,568,228

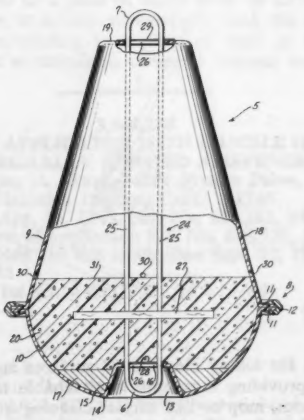
BUOY

John Rudelick, % Rolyan Manufacturing Co., Inc., 4765 N. 32nd St., Milwaukee, Wis. 53209

Filed Jan. 13, 1969, Ser. No. 790,532

Int. Cl. B63l *21/52*

U.S. Cl. 9—8 **2 Claims**



A buoy having a body comprising a shell of plastic material which is shatter resistant and which is substantially unaffected by light in the ultraviolet band of the radiant energy spectrum. A ballast member is located on the bottom of the shell under a mass of permanently buoyant plastic foam.

3,568,229

SCREW-WASHER ASSEMBLY APPARATUS

Robert P. Moore and Burdette R. Steadman, Indianapolis, Ind., assignors to Moorfeed Corporation, Indianapolis, Ind.

Filed Apr. 7, 1969, Ser. No. 814,060

Int. Cl. B21h *3/02;* **B23g** *9/00, 19/08*

U.S. Cl. 10—2 **22 Claims**

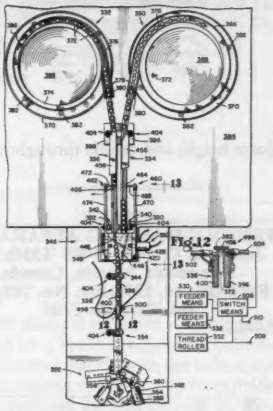


Fig. 12

An apparatus for mating and assembling screw blanks and washers comprising vibratory-type feeder means and thread forming means. The feeder means is arranged to mate screw blanks with washers and to feed the mated blanks and washers to the forming means. In one embodiment, a pair of such feeder means is operatively connected to a thread forming means by a track mechanism which alternately feeds the outputs of the pair of the forming means. In another embodiment, the feeder means comprises a first feeder bowl for feeding screw blanks, a second feeder bowl for feeding washers, first track means for receiving screw blanks from said first bowl, and second track means for receiving washers from said second bowl, the track means being arranged so that screw blanks leaving the exit end of the first track means will mate with washers on the second track means. In other embodiments, the feeder bowls and track means are mounted for adjustable movement to accommodate screw blanks and washers of different size. Further, in some embodiments each bowl and track means is constructed so that it can be easily modified or adjusted to accommodate screw blanks and washers of different size.

3,568,230

METHOD OF MAKING AN INSERT WITH EXPANDABLE HEAD FOR LOCKING IN NON-COUNTERBORED BORES

José Rosán, Sr., San Juan Capistrano, Calif., assignor to Rosan Engineering Corp., Newport Beach, Calif.

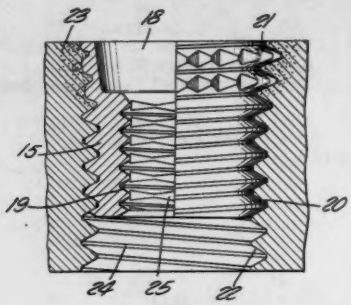
Application Dec. 11, 1967, Ser. No. 691,115, which is a continuation of application Ser. No. 534,360, Mar. 15, 1966. Divided and this application June 20, 1969, Ser. No. 847,773

Int. Cl. B21d *53/20;* **F16b** *25/00, 39/28*

U.S. Cl. 10—86 **8 Claims**

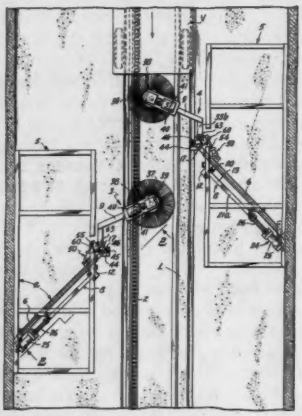
The method for making an insert capable of being locked into a threaded workpiece bore without the use

of a counterbore by providing the insert with a serrated expandable head, but wherein the external threads thereof



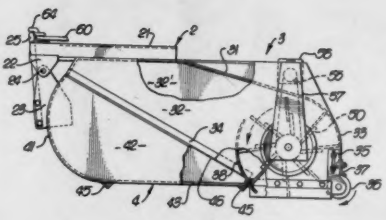
have a uniform height and profile throughout the length of the insert.

3,568,231
VEHICLE WASHING APPARATUS
James A. Carroll, 11708 135th St., Edmonton, Alberta, Canada
Filed Oct. 14, 1968, Ser. No. 767,413
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 **8 Claims**



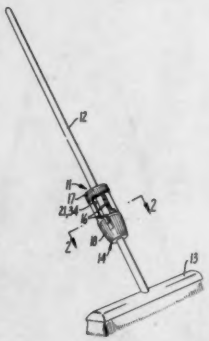
Apparatus for washing motor vehicles, characterized by employing rotary cleaning devices, such as brushes, in such fashion that the rotary cleaning devices are positively urged against the vehicle throughout a working cycle during which one cleaning device traverses first one half of the front of the vehicle, then all of one side of the vehicle, and finally one half of the rear of the vehicle. Each brush or the like is supported by a carriage arranged for rectilinear travel along a line which diverges from the path along which the vehicle being washed is moved. A rectilinear power device is arranged to move the carriage toward the path of travel of the vehicle and the power device yieldably opposes movement of the carriage in the opposite direction. The brush or the like is supported on its carriage by a swinging arm, swinging movement of the arm being limited in one direction by a stop and in the other direction by a device which yieldably opposes the swinging movement and is capable of returning the arm to the limit determined by the stop device. The rectilinear power device is controlled automatically, in response to swinging movement of the arm, so as to respond to the position of the brush or the like relative to the vehicle being washed.

3,568,232
ATTACHABLE SWEEPER
Raymond W. Swanson, Whittier, Calif., assignor to M. P. McCaffrey Inc., Los Angeles, Calif.
Filed June 9, 1969, Ser. No. 831,610
Int. Cl. E01h *1/04*
U.S. Cl. 15—83 **9 Claims**



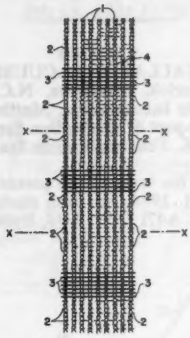
A bottom dump sweeper for removable attachment to fork lift trucks in which the vertical height of the attachable sweeper is minimized, thereby permitting the operator to see the road ahead, the sweeper including improved means for moving a debris pan from a closed position to an open position including means whereby the debris pan is automatically held in the desired position even though the actuating means is fluid powered.

3,568,233
KIT FOR AIDING SURFACE CLEANING
Leo L. Terzian, 712 Franklin St., San Francisco, Calif. 94102
Filed Sept. 18, 1968, Ser. No. 760,656
Int. Cl. A47l *13/12*
U.S. Cl. 15—105 **5 Claims**



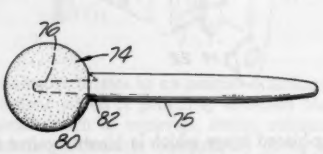
A kit for aiding cleaning of surfaces such as floors, the kit providing a receptacle attachable to the handle of a broom, mop or like surface-cleaning implement, the receptacle being adapted to receive material left on the floor surface following cleaning by such implement, at least one surface-cleaning device such as a scraper being removably mounted on the receptacle for usein removing such remaining material from the floor surface, and for introducing the removed material into the receptacle.

3,568,234
MOP ELEMENT AND A MANUFACTURING METHOD THEREOF
Toshiyoshi Komatsu, Osaka-shi, Japan, assignor to Duskin Franchise Co., Ltd., Osaka-shi, Japan
Filed Dec. 31, 1968, Ser. No. 788,131
Claims priority, application Japan, Sept. 26, 1968, 43/69,730
Int. Cl. A47l *13/20*
U.S. Cl. 15—229 **2 Claims**



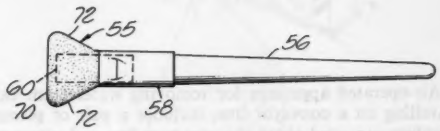
An improved mop element is manufactured by first arranging a number of tough, water-insoluble strands in the form of a neat row of parallel strands as the warps, thereafter weaving these warps into a continuous lengthy plain fabric by repeating the process of weaving two kinds of continuous adjacent plainly woven sections, one of which being woven, up to a predetermined breadth, with said warps of strands and wefts of a tough, but water-soluble chemical filament and the other of said adjacent sections being woven, up to a predetermined relatively narrow breadth, with the adjacent warps of strands and wefts of a water-insoluble tough yarn made of fibers selected from the group consisting of natural fibers, chemical fibers, synthetic fibers and their mixtures so that the resulting continuous plain fabric consists of a plurality of said two sections disposed in alternate fashion, and cutting the continuous lengthy plain fabric along the transverse center line in each of the sections woven with the warps of strands and wefts of a water-soluble chemical filament, so that the mop elements thus prepared are easily stitched to a piece of tough cloth to form a mop head. In use, it is only necessary to soak the resulting mop element stitched to a piece of cloth in water to dissolve said water-soluble chemical filament wefts.

3,568,235
COSMETIC APPLICATOR WITH HANDLE HAVING INTEGRALLY FORMED STIFFENER
Bruno D. Aston, 14211 Skyline Drive, Hacienda Heights, Calif. 91745
Application Apr. 11, 1969, Ser. No. 816,183, which is a continuation of application Ser. No. 660,124, Aug. 11, 1967. Divided and this application Sept. 23, 1969, Ser. No. 860,301
Int. Cl. A47k *7/02*; A47l *13/46*
U.S. Cl. 15—244 **4 Claims**



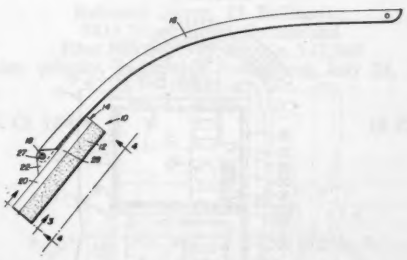
An applicator element mounted on a handle to serve the general purpose of a brush comprises a bulbous body of a soft, resilient, foamed plastic with the cells open to provide communication among the cells and to provide numerous minute outwardly open cavities formed by the outer cells. A stiffener element projecting from the handle is enclosed by the foamed plastic applicator element and is substantially smaller in cross sectional area than the applicator element.

3,568,236
COSMETIC APPLICATOR WITH FLEXIBLE STIFFENER
Bruno D. Aston, 14421 Autumn Moon Drive, Hacienda Heights, Calif. 91745
Application Apr. 11, 1969, Ser. No. 816,183, which is a continuation of application Ser. No. 660,124, Aug. 11, 1967. Divided and this application Sept. 23, 1969, Ser. No. 860,304
Int. Cl. A47k *7/02*
U.S. Cl. 15—244 **2 Claims**



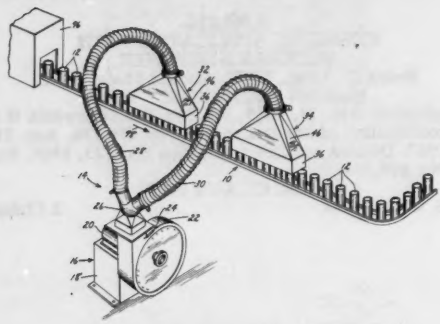
An applicator element mounted on a handle to serve the general purpose of a brush comprises a bulbous body of a soft, resilient, foamed plastic with the cells open to provide communication among the cells and to provide numerous minute outwardly open cavities formed by the outer cells. A stiffener element projecting from the handle is enclosed by the foamed plastic applicator element and is substantially smaller in cross sectional area than the applicator element.

3,568,237
SPONGE BACK WASHER
William L. Rhodes, P.O. Box 16, Aiken, S.C. 29801
Filed Dec. 30, 1968, Ser. No. 787,810
Int. Cl. A47k *7/02*
U.S. Cl. 15—244 **2 Claims**



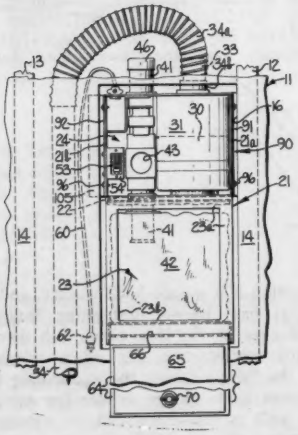
The invention is a sponge back washer, and consists of a rectangular base having upstanding flanges on each edge, the flanges on the long edges also then extending inwardly into cooperative slits on a cellulose sponge placed on the base between the upstanding flanges. As such, it serves as a sponge holder for use as a back washer as well as elsewhere, but for particular use in washing one's back, the holder is also provided with a curved handle pivotally secured to the base face of the base and extendible to a position forwardly of the forward face of the sponge.

3,568,238
FLUID DRYING APPARATUS
Philip L. Fischer, 42—51 Hunter St., Long Island City, N.Y. 11101
Filed Apr. 21, 1969, Ser. No. 817,639
Int. Cl. B67c *1/00*
U.S. Cl. 15—306 **7 Claims**



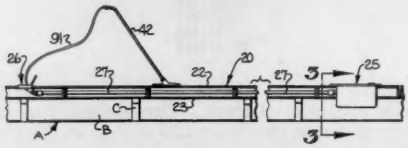
Air-operated apparatus for removing water from cans travelling on a conveyor line, includes a pair of plenum members mounted above the conveyor line and connected to an air compressor. Each plenum has a bottom wall overlying the cans travelling on the conveyor line and containing a series of inclined slots arranged to direct high-velocity jets of air in sheet-like form upon the tops of the cans travelling therebeneath, in a direction opposite to the direction of travel of the cans and at an angle to the axis of the conveyor line.

3,568,239
WALL-MOUNTED VACUUM CLEANER
James C. Hamrick, Matthews, N.C., assignor to JL Products Incorporated, Matthews, N.C.
Continuation-in-part of application Ser. No. 567,615, July 25, 1966, now Patent No. 3,422,482. This application Sept. 24, 1968, Ser. No. 762,083
The portion of the term of the patent subsequent to Jan. 21, 1986, has been disclaimed
Int. Cl. A47l *5/38*
U.S. Cl. 15—314 **20 Claims**



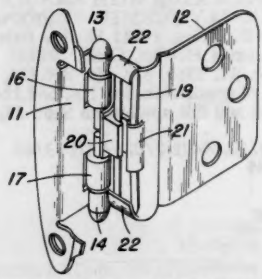
A vacuum cleaner unit positioned within an opening in a building wall and provided with means mounting the cleaner unit for ready installation thereof in and removal thereof from the building wall, the mounting means comprising a bracket means secured within the building wall and including laterally spaced, outwardly extending support arms which straddle the casing of the vacuum unit. Disconnectable means is carried by the arms of the bracket means and by the sidewalls of the cleaner unit for securing the same within the opening in the building wall in such a manner that the frontal portions of the cleaner unit casing project outwardly a predetermined distance from the building wall.

3,568,240
FLOOR INSTALLABLE VACUUM CLEANER
James C. Hamrick, Matthews, N.C., assignor to JL Products Incorporated, Matthews, N.C.
Continuation-in-part of application Ser. No. 567,615, July 25, 1966. This application Jan. 2, 1969, Ser. No. 788,395
The portion of the term of the patent subsequent to Jan. 21, 1986, has been disclaimed
Int. Cl. A47l *5/38, 9/10*; B60s *1/64*
U.S. Cl. 15—314 **17 Claims**



A compact self-contained vacuum cleaner unit especially designed for installation in the floor structure of mobile homes and apartment buildings and having an inlet fitting in one vertical wall thereof for connection thereto of a suction conduit extending beneath the flooring of, and within, the floor structure to an auxiliary hose-receiving receptacle remote from the vacuum cleaner. A hand-operated flexible suction hose is connectable to both the auxiliary receptacle and a main receptacle of the cleaner unit communicating with the inlet fitting and, when not in use, the suction hose is stored within the auxiliary receptacle and the suction conduit thereof.

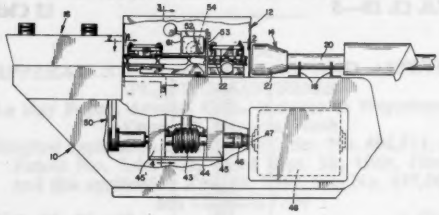
3,568,241
HINGE
Joseph D. Uffner, Elmhurst, N.Y., assignor to U.S. Industrial Corporation, Corona, N.Y.
Filed May 14, 1969, Ser. No. 824,626
Int. Cl. E05d *11/08*; E05f *1/12*
U.S. Cl. 16—142 **5 Claims**



A spring-biased hinge which is biased against the opening of a cabinet door is disclosed. Such a hinge eliminates the need for a latch on a door. The spring biasing mechanism is simpler than prior art designs, and includes a

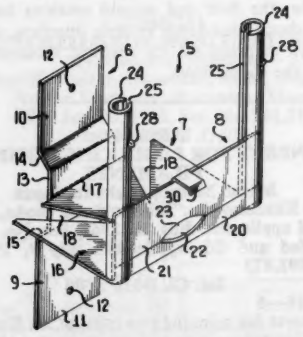
spring retained in one hinge plate without an extra mounting member, and a cam follower which rides a tongue on the other hinge plate.

3,568,242
SAUSAGE CASING SLITTING APPARATUS
Lowell Bruce Moore, Moline, Ill., assignor to The Kartridg Pak Co., Davenport, Iowa
Filed June 11, 1969, Ser. No. 832,270
Int. Cl. A22c *13/00*
U.S. Cl. 17—1 **6 Claims**



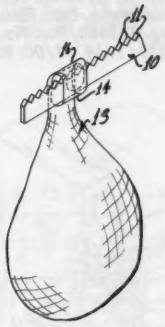
An apparatus for slitting the casing so as to enable the same to be removed from strings of sausage links wherein a traveling conveyor advances the encased sausages past a slitting knife which is set in a housing with the edge of the blade adjustably positioned in a slot so that it projects a sufficient distance to cut through the casing only and a spring pressed arm is disposed opposite the knife edge with a curved portion over which the sausages ride so that they are pressed against the face of the housing and into engagement with the projecting blade edge as they advance past the same.

3,568,243
ANIMAL SKINNING AND DRESSING ATTACHMENT
Noah Hines, General Delivery, Creston, La. 71020
Filed July 29, 1969, Ser. No. 845,728
Int. Cl. A22c *15/00*
U.S. Cl. 17—44.2 **9 Claims**



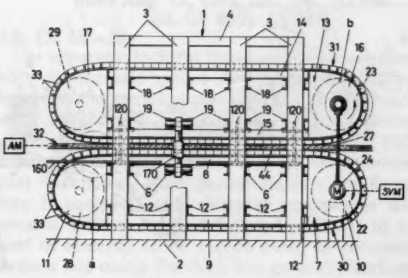
This disclosure relates to an animal skinning and dressing attachment which is primarily intended for use with small animals, such as squirrels, ducks, rabbits, etc. The attachment is particularly constructed to be secured to any convenient upright support, including a tree, and includes a horizontal plate having slots therein arranged in spread apart converging relation for anchoring the hind legs of an animal. In addition, at the forward edge of the plate there is a mechanism for gripping the neck of an animal, the mechanism including a vertically sliding door which is resiliently urged to a neck gripping position.

3,568,244
PROCESS AND APPARATUS FOR SUPPORTING MEAT PRODUCTS FOR CURING
Charles C. King, Jacksonville, Ala., assignor to Brecon Knitting Mills, Inc.
Filed Jan. 2, 1968, Ser. No. 694,986
Int. Cl. A22c *15/00*
U.S. Cl. 17—45 **1 Claim**



Process for supporting meat products for curing within stockinette-like members having a free end extending outwardly of the product. Upstanding friction members are provided on an upper portion of an elongated support bar frictionally engaging the free end of each stockinette member. Upon placing the free end of the stockinette member over the bar and wrapping the stockinette member around and under the bar and then over said free end, the weight of the product urges the portion of the stockinette member superjacent the free end into engagement with said free end.

3,568,245
APPARATUS FOR MAKING COMPOSITION PANELS
Raimund Jetzer, 13 Hohenweg, 5415 Nussbaumen, Switzerland
Filed July 24, 1968, Ser. No. 747,265
Claims priority, application Switzerland, July 24, 1967, 10,617/67
Int. Cl. B29c *15/00*
U.S. Cl. 18—4 **12 Claims**



An apparatus for making composition panels consisting of solid constituents and initially flowable hardenable binding materials, comprises two endless belts arranged

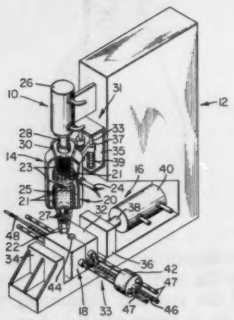
to be driven in mutually opposite directions and having spaced substantially coextensive facing stringers defining between themselves a gap through which a layer of the material advances with the binder in flowable state. The facing stringers of the belts exert pressure upon this layer from opposite sides thereof, and means is provided for varying this pressure. During travel through the gap the binder hardens and the layer issues at the downstream end of the gap as a solid panel.

3,568,246

APPARATUS FOR MOLDING IMPROVED BULKHEADS FOR SEISMIC STREAMERS AND THE LIKE

Richard P. David, Houston, Tex., assignor to Mandrel Industries, Inc., Houston, Tex.

Filed Aug. 5, 1968, Ser. No. 750,237
Int. Cl. B29c *1/14, 11/00*; B29f *1/19*
U.S. Cl. 18—5 **9 Claims**



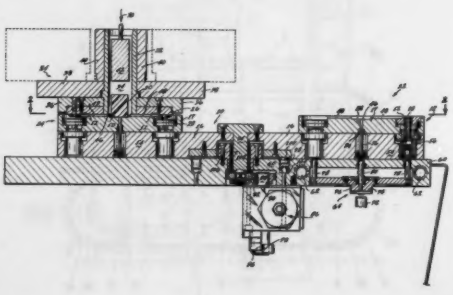
A bulkhead of improved impact strength and compressive loading properties is molded in place during the fabrication or repair of a streamer cable assembly. Fabrication in place is made possible by a split mold assembly having removable sections and either split or solid mandrels. The bulkheads may also be fabricated as a separate unit for use in other applications.

3,568,247

MOLDING MACHINE

Frank Lunn, South Pasadena, Calif., assignor to Spectrol Electronics Corporation

Filed Aug. 7, 1968, Ser. No. 750,906
Int. Cl. B29c *3/00*
U.S. Cl. 18—5 **8 Claims**



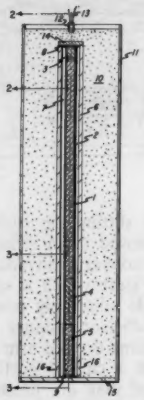
A molding machine for encasing electrical components. A rotatable platform is provided with oppositely disposed platens containing a plurality of mold cavities. The platens are spaced so as to be rotated simultaneously and respectively into and out of a loading station and a molding station. Each cavity is adapted to securely receive and readily eject electrical components. Means are also provided for urging encasing material from a central location on each platen into each cavity.

3,568,248

PLUG CLOSURE IN A CONTAINER FOR SUBJECTING SAMPLE TO SHOCK WAVE

George R. Cowan, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 4, 1969, Ser. No. 804,199
Int. Cl. B30b *11/00, 5/00, 15/00*
U.S. Cl. 18—5 **12 Claims**



A plug closure for closing the end of a cylindrical container, e.g., one end of a circular metal cylinder, containing a sample that is being subjected to a shock wave, which retains the sample while permitting the shock wave to leave it by propagating into the closure across the sample/closure interface, comprising a first section in contact with the sample, which is of about the same shock impedance as the sample at the interface therewith and which is solid after passage of the shock wave through said section and of sufficient strength to retain the sample in the container; and a second section in contact with the surface of the first section opposite that which contacts the sample, the first and second sections having about the same shock impedance at their interface, and the second section carrying off, by spalling, momentum associated with the shock wave.

3,568,249

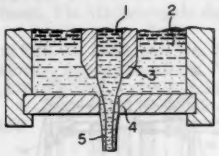
SPINNERET FOR PRODUCING COMPOSITE FILAMENTS

Masao Matsui, Osaka-fu, Japan
(7–18 Kitazono-cho, Takatsuki-shi, Osaka, Japan)

Original application July 29, 1965, Ser. No. 475,667. Divided and this application July 9, 1968, Ser. No. 801,873
Int. Cl. D01d *3/00*
U.S. Cl. 18—8 **3 Claims**

A spinneret for spinning two component filaments comprising a unitary core and a sheath conjointly melt-spun around the core and wholly covering the core, comprises an inner nozzle for extruding the core and an outer nozzle for spinning the sheath. The inner nozzle is arranged upstream in approximate alignment with the outer nozzle. The inner nozzle has an extrusion opening with a basically symmetrical cross sectional area of non-circular shape having a mean moment of inertia higher than that of a circular section of the same area. The corresponding cross

sectional shape of the extruded core imparts flexural rigidity and bending resistance to the core. The cross



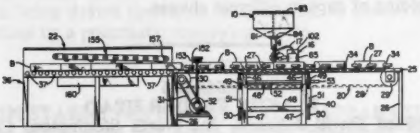
sectional shape of the outer nozzle may be circular or may conform to that of the inner nozzle.

3,568,250

APPARATUS FOR EXTRUDING AND APPLYING PLASTIC MATERIALS

Le Roy Payne, Arvada, Colo., assignor to Weyerhaeuser Company, Tacoma, Wash.

Original application Sept. 10, 1965, Ser. No. 486,511, now Patent No. 3,469,281, dated Sept. 30, 1969. Divided and this application Apr. 28, 1969, Ser. No. 837,002
Int. Cl. B29d 7/04
U.S. Cl. 18—12 3 Claims



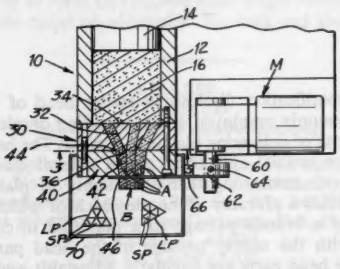
An extruder apparatus for plastic materials having an elongated extrusion chamber on a hollow feed screw mounted within the chamber. Material enters one end of the chamber through a hopper and exits from the opposite end of the chamber. Additional material may be placed in the chamber through a check valve which is operated by the feed screw. The diameter of the feed screw is smaller than the diameter of the chamber at the entrance to the chamber and the feed screw increases in diameter toward the exit end of the chamber. The exit end has a discharge slot which is aligned in parallel relation to the longitudinal axis of the chamber. The slot increases in width in the direction away from the chamber.

3,568,251

APPARATUS FOR MANUFACTURING TUMBLING MEDIA

Robert H. Walker, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jan. 29, 1968, Ser. No. 701,310
Int. Cl. B29d 31/00
U.S. Cl. 18—12 8 Claims



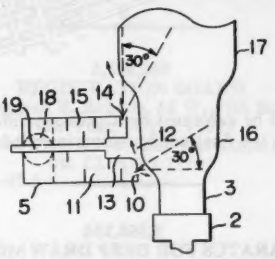
Extruding a plastic abrasive mix through a multi-hole die adapted to combine emerging strands of the mix into a single strand whereby the strands move at the same linear rate. The single strand is cut into large pellets of uniform length, after which they are divided into smaller pellets corresponding to the original number, size, and shape of each of the combined strands and cured.

3,568,252

ANNULAR COOLING DEVICE FOR MANUFACTURE OF TUBULAR FILM

Kohei Masuda, Kazumasa Hasegawa, and Akio Okamoto, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd.

Filed Mar. 6, 1968, Ser. No. 711,121
Claims priority, application Japan, Mar. 15, 1967, 42/16,180; Sept. 11, 1967, 42/58,289
Int. Cl. B29d 23/04
U.S. Cl. 18—14 2 Claims



In the manufacture of a film of a thermoplastic resin according to an inflation method, the improvement which comprises extruding a molten resin from an annular die, cooling preliminarily thus extruded resin with a gaseous coolant to not lower than the softening point of said resin, inflating preliminarily thus cooled resin by air having reduced pressure, cooling thus inflated resin with a gaseous coolant rapidly to below the softening point of said resin while further inflating the same to a predetermined dimension by a gaseous medium sealed in the resulting tubular film of said resin and fixing the dimension of the resulting tubular film at the predetermined point. There is also disclosed an annular cooling device employed in the manufacture of the tubular film.

3,568,253

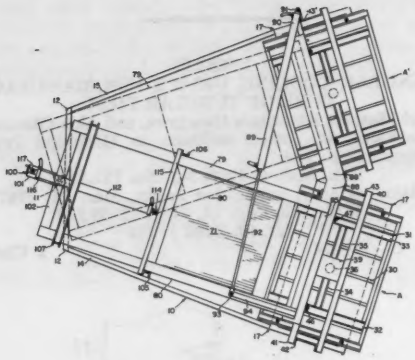
THERMOFORMING APPARATUS

Robert A. D. Schwartz, Oakland, and Barry Dep and Robert L. Hall, San Leandro, Calif., assignor to United Plastics Corporation, Oakland, Calif.

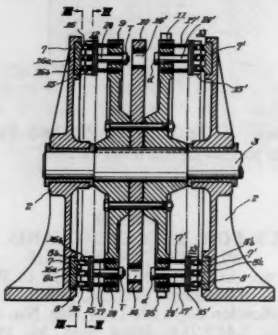
Filed Aug. 15, 1968, Ser. No. 752,980
Int. Cl. B29c 17/04
U.S. Cl. 18—19 4 Claims

The apparatus includes frame structure providing a plurality of angularly spaced stations radially disposed with respect to the retracted position of a pair of heating elements reciprocable between such retracted position and extended positions at one or another of such stations so as to heat a sheet of material located thereat concurrently from the opposite sides thereof. Each of the forming stations is equipped with clamping mechanism selectively movable between open and closed positions to engage a sheet of material at the station along its perimetric edge portions and clamp the sheet in a generally horizontal orientation. Each of the forming stations is provided with platen structure comprising male and female platens cooperative with a heated sheet of material to deform the same mechanically toward its final configuration, and

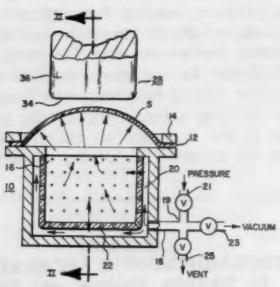
each of the female platens is equipped with means for reducing the pressure therewithin to enable the sheet of material to be deformed by a pressure differential thereacross into the final configuration intended therefor.



so formed as to receive pairs of aligned male and female molds in their sequential operation under cam control. Molding and severing operation of increased accuracy is obtainable with this construction. The molds are to be replaceably mounted on the respective discs to enable the molding of caps in different shapes.



3,568,254
APPARATUS FOR DEEP DRAW MOLDING
Thomas J. Stolki, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 19, 1968, Ser. No. 760,757
Int. Cl. B29c *17/03, 17/04*
U.S. Cl. 18—19 **7 Claims**



A specially contoured thermoforming plug having two sides with depressions formed therein in order to provide improved distribution of material in deep draw molded articles.

3,568,255
AUTOMATIC PLASTIC CAP MOLDING MACHINE
Mikihiko Hanai, 8–7 4-chome, Kachidoki, Chuo-ku, Tokyo, Japan
Filed Feb. 6, 1968, Ser. No. 703,308
Claims priority, application Japan, Mar. 29, 1967, 42/19,223
Int. Cl. A22b *5/08*
U.S. Cl. 18—20 **4 Claims**

A rotary machine construction including an additional rotary disc which is interposed between the male- and female-mold carrying discs for rotation therewith and is

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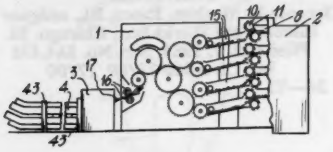
3,568,256
PLASTIC FEEDER HEAD
Clifford David Johnson, Jr., North Stonington, Conn., assignor to J.&J. Machine Co., Inc., Providence, R.I.
Filed July 15, 1968, Ser. No. 744,735
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **12 Claims**

This specification discloses a feeder head of the type now commonly employed in the molding of plastics for the purpose of delivering plastic to a mold. The head comprises two coaxial cylindrical parts. One of these has a passage communicating with the supply of plastic. The other carries a plurality of nozzles each of which is connected by a branch passage to a manifold in communication with the supply passage in the head part aforesaid. The head parts are angularly adjustable and held in an adjusted position by a pair of screw bolts anchored in the first head part and passing through diametrically opposed arcuate slots in the other part.

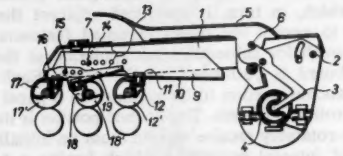
3,568,257
APPARATUS FOR CONVERTING TEXTILE STAPLE FIBERS TO CARDED SLIVER AND FEEDING SUCH A SLIVER IN CANS
Angelo Marinoni, Via Michelangelo da Caravaggio 17, Bergamo, Italy
Filed Oct. 29, 1968, Ser. No. 771,562
Claims priority, application Italy, Nov. 6, 1967, 1,338/67; Oct. 7, 1968, 1,340/68
Int. Cl. D01g *15/40*
U.S. Cl. 19—150 12 Claims



Apparatus comprising a plurality of horizontal tubular containers into which a sliver of textile fibers from a multiple feeding carding machine is distributed by a rotating head.

The apparatus also comprises a conveyor belt on which metered amounts of textile staple fibers are loaded, such fibers being drawn therefrom and supplied to the carding machine by a pneumatic conveying device.

3,568,258
ADJUSTABLE TEXTILE DRAFTING APPARATUS
Adolf Schiltknecht and André Lattion, Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed July 11, 1968, Ser. No. 744,148
Claims priority, application Germany, July 13, 1967, M 74,745
Int. Cl. D01h *5/56*
U.S. Cl. 19—295 6 Claims



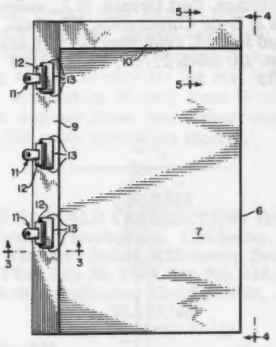
The guide arms pivotally mounts a rear saddle which in turn pivotally mounts the front saddle. The central pressure roller is adjustably mounted in the front saddle while the rear pressure roller is adjustably mounted in the rear saddle. Also, the central pressure roller and rear pressure roller are mounted in planes which intersect each other to form an enclosed acute angle thereby allowing a wide range of adjustment for long and short staple fibers.

3,568,259
TYING CLIP
Paul Gaudlitz, 30 Fuhlsbuttelerweg, 2000 Hamburg 61, Germany
Original application Feb. 17, 1966, Ser. No. 528,273, now Patent No. 3,473,292, dated Oct. 21, 1969. Divided and this application Aug. 4, 1969, Ser. No. 847,360
Claims priority, application Germany, Feb. 19, 1965, G 42,883, G 42,884
Int. Cl. G65d *63/00*
U.S. Cl. 24—30.5 3 Claims

An elongated deformable clip for mechanically tying containers such as sausage casings, bags and the like, having two substantially parallel lateral strips, two connecting end portions, an elongated central slot and teeth on the upper and/or lower surface of said lateral strips. For tying said clip is bent around a constricted portion of

the casing and one end portion of the clip is drawn through said central slot until the other end portion is engaged by said teeth, simultaneously forming a looped handle for carrying or supporting said tied container.

3,568,260
REGISTRATION BOARD
Maxwell B. Roberts, 60 W. 57th St., New York, N.Y. 10024
Filed May 7, 1969, Ser. No. 828,416
Int. Cl. A44b *21/00*
U.S. Cl. 24—67.5 2 Claims

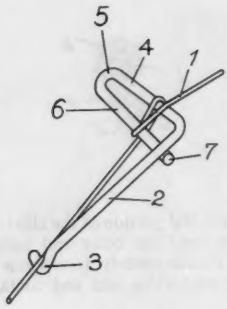


A simple durable, practical and inexpensive registration board to be used in registering colored woodcuts, the device being particularly adapted for extra large work, and there is no risk of maladjusted registrations.

3,568,261
DEVICE FOR TIGHTENING WIRES
Erich Korb, Wachenheim, Germany, assignor to Gerd Elfgen, Wesseling, Bezirk Cologne, Germany
Filed Mar. 4, 1969, Ser. No. 804,233
Claims priority, application Germany, Mar. 5, 1968, K 60,473
Int. Cl. A44b *21/00*
U.S. Cl. 24—71.3 1 Claim

A wire tightening device comprising a single length of wire one end portion of which forms a tensioning arm and has on one end a hook to engage the tightened wire while the other end portion of the length of wire is bent at a right angle to form a first winding arm and then is bent U-shaped and is formed into a second winding arm extending substantially parallel to the first winding arm

and crosses the tensioning arm. Between the tensioning arm and the end portion of the second winding arm is left a space at least equal to the thickness of the wire to be

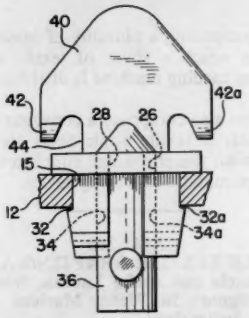


tightened so as to insert the wire through this space and permit the wire to be wound about the two winding arms during the tightening operation.

3,568,262
PRE-MOUNTABLE BUNDLING STRAP
Jesse Woldman, East Orange, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Jan. 15, 1969, Ser. No. 791,452
Int. Cl. A44b *21/00*; B65d *63/00*
U.S. Cl. 24—73 **34 Claims**

The disclosure is directed to an article bundling strap which may be pre-mounted to a mounting surface and then placed about an article, or articles, to be bundled to affix such articles to the mounting surface. The strap in a first of its basic embodiments consists of an elongated bundling strap terminating at one end in a free tail end portion and at the other in a deflectable tongue having a boss thereon. At least two ribs extend from the body of the strap and terminate in a tab, having a boss thereon. Position room is left between the rib to permit the movement of the deflectable tongue. Either of the bosses may have placed therethrough transverse apertures to admit passage of the body portion of the strap therethrough and the remaining boss may have an aperture therethrough to admit passage of a fastening means for fastening the strap to a mounting surface. In a second embodiment of the device, a deflectable tongue, is mounted upon the tab portion supported by the extending ribs.

3,568,263
FASTENER
Clarence L. Meehan, Itasca, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Oct. 7, 1969, Ser. No. 864,436
Int. Cl. A44b *21/00, 17/00*
U.S. Cl. 24—73 **8 Claims**

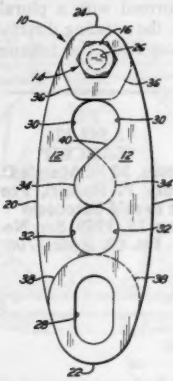


A fastener for securing a printed circuit board to a panel having apertures to mount the fasteners thereon in predetermined outline such as at positions corresponding to the corners of a square or rectangular printed circuit board which, in turn, is apertured adjacent the corners thereof to permit the panel mounted fasteners to pass therethrough for subsequent manipulation as the printed circuit board is positioned on the panel. Each fastener has an anchor portion to be mounted in a panel aperture against rotation therein. The anchor portion is itself apertured to rotatably receive therein from an initially axially projected integral position a shank having a transverse pin at one end to cooperate with inclined cam surfaces on the adjacent end of the anchor portion when rotated, the shank having at the opposite end thereof a wing projecting through a corresponding aperture in the printed circuit board and to be rotated a quarter turn to place the lateral clamping edges thereof in stressed engagement with the outer surface of the printed circuit board under influence of the coaction between the ends of the pin and the cam surfaces during such quarter turn rotation.

3,568,264
CLAMP
Guy R. Crist, Port Arthur, and Roy Earl Hill, Jr., Bridge City, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Mar. 19, 1969, Ser. No. 808,606
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 **8 Claims**

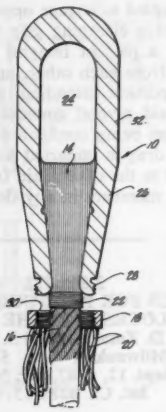
A scissor action clamp for use with a pair of spaced parallel members comprising a pair of substantially identical clamp halves hinged at one end and provided with registering openings at the other end, in the closed posi-

tion of the clamp. The clamp is locked and simultaneously provides a location for attachment of other objects by



cooperation between the registering openings and such other object.

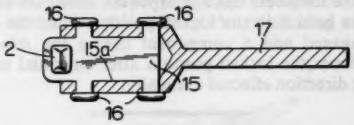
3,568,265
DEAD END OF THE SPELTER SOCKET TYPE FOR WIRE CABLES
Randolph C. H. Michaelsen, Malibu, Calif., assignor to Global Marine Inc., Los Angeles, Calif.
Filed Dec. 5, 1968, Ser. No. 781,570
Int. Cl. F16g *11/00*
U.S. Cl. 24—123 **10 Claims**



A collar having a plurality of wire strands is attached to a spelter socket after the latter is poured around a splayed end of a wire cable. The wires are braided around the wire cable to enhance the cable's fatigue life.

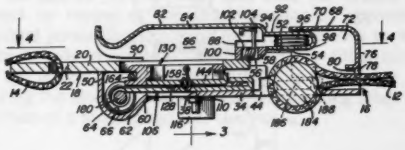
3,568,266
FASTENER ELEMENTS
Wilhelm Uhrig, Wuppertal-Elberfeld, Germany, assignor to Supla Etablissment, Vaduz, Liechtenstein
Filed May 20, 1969, Ser. No. 826,236
Claims priority, application Germany, May 27, 1968, P 17 60 491.0
Int. Cl. A44b *19/06, 19/40*
U.S. Cl. 24—205.1 **5 Claims**

A slide fastener element is formed from a thin plastic block. The coupling means which interlock the successive fastener elements is carried by the faces of the block. Pointed securing means extend from a narrow side of the block. The pointed securing means may be in the form of pointed pins or prongs. The securing means are forced into and penetrate the supporting tape and extend be-



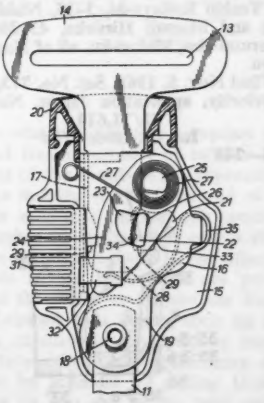
yond the tape. The extending portions of the securing means are heated and thereafter, are headed whereby the element is positively secured to the tape.

3,568,267
SEAT BELT BUCKLE CONSTRUCTION
Louis A. Lefort, 142 Beekman St., Plattsburgh, N.Y. 12901
Filed Aug. 2, 1968, Ser. No. 749,628
Int. Cl. A44b *11/25*
U.S. Cl. 24—230 **3 Claims**



A pair of seat belt buckle sections for securement to adjacent ends of seat belt sections and manually releasably securable together against separation but including structure responsive to a force above a predetermined value being applied to separate the seat belt sections and subsequent termination of such force to release the seat belt buckle sections from interlocked engagement with each other for ready separation thereof.

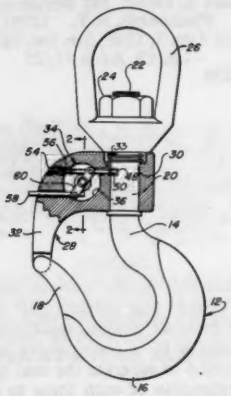
3,568,268
RELEASABLE CONNECTING DEVICE
Douglas James Cunningham, Chichester, England, assignor to Wingard Limited, Chichester, Sussex, England
Filed July 30, 1969, Ser. No. 846,025
Claims priority, application Great Britain, July 30, 1968, 36,210/68
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 **5 Claims**



A fastening device for releasably connecting two members incorporates a rigid frame, a release lever pivotally mounted on the frame, and a pawl angularly movable in

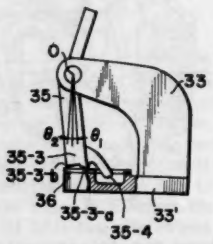
aligned shaped openings in the frame and lever and adapted ot engage with a step or shoulder on a tongue inserted into the frame, the co-operation of the pawl with the openings being such that aforce acting to separate the members has a component acting on the release lever to hold it in the locked position when the members are engaged and a component urging the release lever away from the locked position after an initial movement in that direction effected manually.

3,568,269
HOISTING HOOK GATE LATCH
Anthony L. Moretti, San Rafael, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Aug. 21, 1969, Ser. No. 851,782
Int. Cl. B66c *1/34*
U.S. Cl. 24—241 **4 Claims**



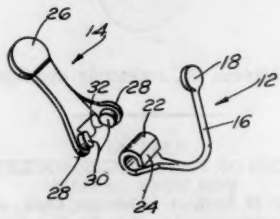
A lock for retaining a safety gate across the throat opening of a hoisting hook to prevent inadvertent disengagement of a load. The elements of the gate lock are formed by boring operations. The operative parts move radially of the axis of movement of the hook gate so that forces applied to unlock the gate do not tend to open the gate. A gate lock that can be expeditiously manipulated by a hot stick of the type used by power linemen.

3,568,270
TENTER CLIPS
Saburo Ida, 10–203 Hatooka-danchi, 1–7 Hatooka-machi, Kita-ku; Yoshio Kobayashi, 3–35, Nishikawabata-cho, Naka-ku; and Matsuji Hiraoka, 43–209, Aza-Ozakiyama, Narumi-cho, Midori-ku, all of Nagoya-shi Aichiken, Japan
Filed Nov. 5, 1968, Ser. No. 773,461
Claims priority, application Japan, Nov. 7, 1967, 42/71,610
Int. Cl. D06c *3/04*
U.S. Cl. 24—248 **3 Claims**



A tenter clip having a base plate on which the border of a strip to be clipped is placed and a clip lever rotatably pivoted to the clip body. The clip lever can be rotated in such a manner that the lower end thereof is brought into abutting relationship to the base plate. The lower end of the clip lever is formed with a plurality of edges at an angular interval in the rotating direction of the lever and at different distances from the fulcrum point of the clip lever.

3,568,271
EARCLIP
Anthony R. Saccoccio, 30 St. Mary's Drive, Cranston, R.I. 02910, and Henry P. Husserl, Providence, R.I.; said Husserl assignor to said Saccoccio
Filed Aug. 18, 1969, Ser. No. 850,986
Int. Cl. A44c *7/00*
U.S. Cl. 24—248 **6 Claims**

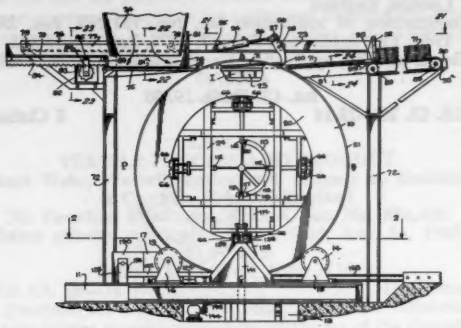


An earclip for use in earrings and the like comprising a pair of pivotally connected members, each of which has a portion adapted to engage opposite sides of a wearer's lobe to effect a clamping grip thereon, one of said members having a pair of integral pintles in alignment with but spaced from each other, and the other member having a rolled portion extending around said pintles to effect the aforesaid pivotal connection, said pintles and said rolled portion being configured and dimensioned so that a frictional drag is imparted as one member is pivoted with respect to the other, said frictional drag serving to maintain said members in any desired position of adjustment.

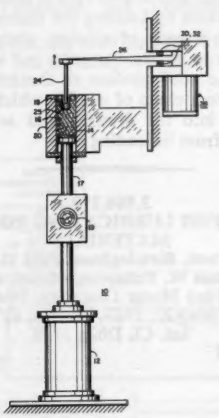
3,568,272
APPARATUS FOR PRODUCING MASONRY BLOCKS AND THE LIKE
Leo D. Zmania, 4580 S. 14th St., Milwaukee, Wis. 53221
Filed Sept. 12, 1967, Ser. No. 667,112
Int. Cl. B28b *15/00*
U.S. Cl. 25—2 **18 Claims**

A concrete block forming machine which basically includes a revoluble drum having mounted within its interior for rotation about a horizontal axis a plurality of mold boxes which are uniformly spaced circumferentially about the axis of rotation of the drum, for movement successively from a station located at the top of the drum at which a mold box is charged with concrete to a station located at the bottom of the drum at which the mold box is stripped of the concrete block formed therein. In the machine as disclosed the mold boxes are four in number and so are spaced ninety degrees apart, with each box moving through an arc of 180 degrees from the mold charging station to the block stripping station. In addition to the revoluble drum with its interiorly mounted mold boxes, the machine includes in the base thereof operating mechanism for effecting rotation of the drum and thus successive positionment of the several mold boxes at the concrete charging station, which operating mechanism also includes means for effecting vibration

of each of the mold boxes during the interval of time that it is being charged with concrete as well as during an interval just prior to its being stripped of the block formed therein.



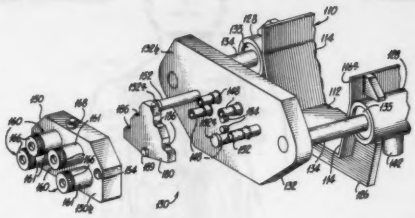
3,568,273
PREPARATION OF CERAMIC BODIES AND THE LIKE
Larry M. Ogden and Boyd A. Wise, Penfield, N.Y., assignors to General Dynamics Corporation
Filed Nov. 3, 1967, Ser. No. 680,430
Int. Cl. B28b *1/10, 7/18, 21/14*
U.S. Cl. 25—3 5 Claims



Method and apparatus for preparing ceramic bodies which method comprises fluidizing a charge of a wet clay body or the like either while it is being formed or in a post-forming operation. The fluidization provides a more homogeneous and isotropic body. Thereafter, the body is fired to form a finished ceramic part or object.

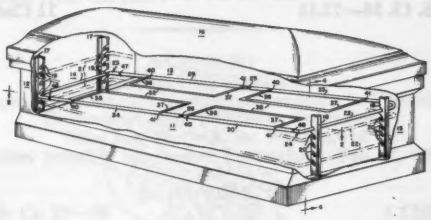
3,568,274
APPARATUS FOR MAKING PRESTRESSED CONCRETE MEMBERS
William P. Hidden, Wenham, and Robert S. Yetman, Concord, Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.
Filed Apr. 16, 1968, Ser. No. 721,793
Int. Cl. B28b *7/00, 23/06*
U.S. Cl. 25—41 15 Claims

A system for manufacturing prestressed concrete members comprising a portable mold for receiving the reinforcing strand and concrete mix, and apparatus for accurately tensioning the strands in the mold to the desired pretensioning level. The portable mold includes end assemblies which include means to receive and grip the free ends of reinforcing strand extended through the mold body and means for maintaining the reinforcing strands



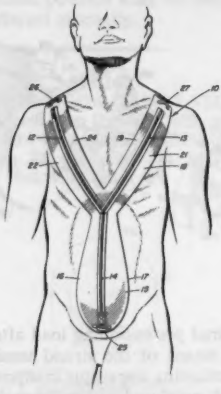
under the desired pretensioning load after the strands are tensioned by means of the strand tensioning apparatus. The strand tensioning apparatus comprises means to tension the strands emplaced within the mold by either measuring the tensioning force applied to the strands or by measuring the elongation of the strands resulting from the application of a tensioning force thereto.

3,568,275
CASKET BED
William R. Carson, Jr., % Imperial Casket Company, Inc., Leesville, S.C. 29070
Filed June 7, 1968, Ser. No. 735,386
Int. Cl. A47c *19/02;* A61g *17/00*
U.S. Cl. 27—12 8 Claims



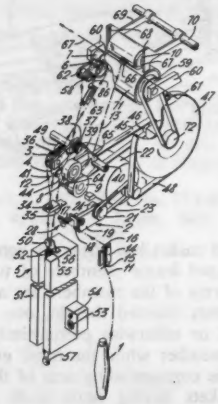
A simplified casket bed structure comprises two longitudinal U-shaped frame members of tubular stock. The ends of the arms of the members are adjustably secured together by bars inserted therein, one end of each bar being welded or otherwise permanently secured to the arm of one member while the other end is slidably engaged with the corresponding arm of the other member. Vertical brackets having hook slots are provided on the end walls of the casket to support the frame members. Lateral U-shaped rods having their tip ends bent downwardly are cantileverly supported by inserting the tip ends in apertures of the tubular members. Additional bed lengths can be achieved by adding U-shaped extension members to one end or to both ends of the assembled bed. These extension members are provided with inturned tips which register with apertures on opposite sides of each longitudinal frame member.

3,568,276
BODY INCISION CLOSURE
Robert W. Morgan, Worcester, Mass., assignor to Worcester County National Bank, Worcester, Mass.
Filed Nov. 19, 1968, Ser. No. 776,993
Int. Cl. A01n *1/00*
U.S. Cl. 27—21 6 Claims



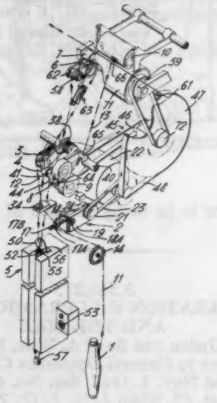
This invention relates to a body seal and, more particularly, to apparatus and methods useful during autopsy and embalming procedures for closing body incisions.

3,568,277
METHOD OF CRIMPING YARN
Denis Albert Edward Mattingly, London, England, assignor to The Klinger Manufacturing Company Limited, London, England
Continuation of application Ser. No. 830,202, May 26, 1969, which is a continuation of application Ser. No. 563,874, July 8, 1966. This application Jan. 29, 1970, Ser. No. 7,396
Claims priority, application Great Britain, July 22, 1965, 31,135/65; Mar. 18, 1966, 11,993/66
Int. Cl. D04b *19/00*
U.S. Cl. 28—72.16 11 Claims



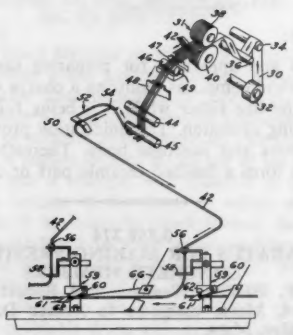
Yarn is crimped by forming it into a chain of stitches, setting the chain of stitches in the configuration of the stitches while the chain is under tension, and then unravelling the yarn from the chain. Apparatus for crimping includes a device for knitting yarn into a chain of stitches, positive driving means for conveying the chain under tension past a heater, and means for unravelling yarn from the chain of stitches.

3,568,278
METHOD OF DRAWING AND CRIMPING YARN
Denis Albert Edward Mattingly, London, England, assignor to The Klinger Manufacturing Company Limited, London, England
Continuation of application Ser. No. 701,248, Jan. 29, 1968. This application Feb. 27, 1970, Ser. No. 15,243
Claims priority, application Great Britain, Jan. 28, 1967, 4,316/67
Int. Cl. D04b *19/00*
U.S. Cl. 28—72.16 5 Claims



Undrawn or partially drawn yarn is crimped and drawn or more fully drawn by knitting the undrawn or partially drawn yarn into a body of stitches, stretching the body of stitches so as to drawn the yarn and setting the yarn while it is in the configuration of the stitches. The body may be a chain of stitches which is continuously knitted, fed into the drawing and setting zone and then unravelled from its leading end.

3,568,279
PROCESS FOR LUBRICATING POLYMERIC MATERIALS
Peter P. A. Burnett, Birmingham, Paul D. O'Kray, Dearborn, and James W. Patterson, Mount Clemens, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 22, 1969, Ser. No. 827,005
Int. Cl. D02g *3/36*
U.S. Cl. 28—75 5 Claims



A lubricant used in manufacturing knitted polyvinyl chloride materials is formed from an aqueous emulsion of a plasticizer for the polyvinyl chloride, such as a dialkyl

phthalate in which the alkyl radicals contain 6 to 10 carbon atoms. During subsequent processing the aqueous dispersion medium evaporates and the plasticizer is absorbed into the polyvinyl chloride film. The lubricant reduces process disruptions for equipment cleaning and produces materials having a more uniform color, surface appearance and pliability.

3,568,280

TEXTILE PROCESS AND PRODUCT

Ernst Weiss, Wattwil, Switzerland, assignor to Raduner & Co. AG., Horn, Switzerland

No Drawing. Filed Aug. 5, 1966, Ser. No. 570,400
Claims priority, application Switzerland, Aug. 24, 1965, 11,891/65
Int. Cl. D06c *3/00, 3/08, 3/10*
U.S. Cl. 28—76 **11 Claims**

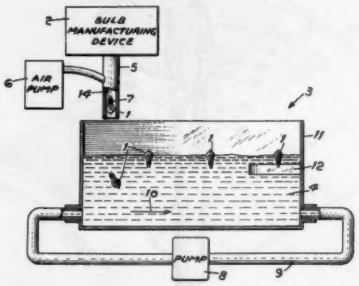
Processes for increasing the strength of woven cellulosic textile fabrics comprising stretching one set of the threads of a moist fabric while such threads are in a substantially straight line (that is, they are not in a wave-like configuration), drying the fabric while it is so stretched, treating the fabric with a cross-linking agent, either before or after the stretching, and subsequently curing the cross-linking agent after said drying, together with textile fabrics so obtained.

3,568,281

PHOTOGRAPHIC FLASHBULB MANUFACTURING

Jack G. Barben, Paramus, N.J., Ernest J. Gallo, Queens Village, and Charles W. Johnson, Huntington, N.Y., and William B. Tyndale, Waverly, Pa., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 23, 1969, Ser. No. 793,471
Int. Cl. H01j *9/16, 9/44*
U.S. Cl. 29—25.18 **13 Claims**



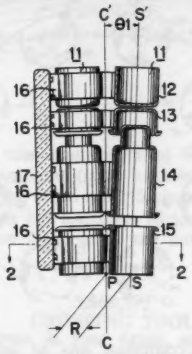
A method and apparatus for processing flashbulbs including a pneumatic tube for injecting said bulbs, tip first, into a vat of trichloroethylene so as to distribute zirconium foil throughout the bulb and to clean said bulbs. A barrier is provided at one end of the vat remote from the impact area, said barrier having slots formed therein. A pump is provided to set up a current in the trichloroethylene for carrying the bulbs, which float downstream in the trichloroethylene, from the impact area to the barrier area of said vat. Each slot in said barrier is slightly wider than one wire of the two-wire contact leads of each bulb, and is located below the surface of the trichloroethylene, and below the glass portion of the bulbs, at the level of the wire contact leads, so that the wires can only fit into the slot in such a manner that they are rotationally oriented about their longitudinal axis.

3,568,282

APPARATUS FOR ASSEMBLING A MULTI-ELEMENT ELECTRON GUN MEMBER

Shinichi Sawagata, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 9, 1968, Ser. No. 751,611
Claims priority, application Japan, Aug. 19, 1967, 42/52,961; Sept. 4, 1967, 42/56,530
Int. Cl. H01j *9/06, 9/10, 9/46*
U.S. Cl. 29—25.19 **8 Claims**



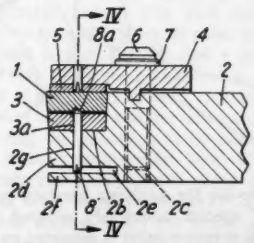
Apparatus for assembling a multielement electron gun member from cylindrical grid electrodes. The included central rods securely inserted into support holes formed in a support stand in prescribed relative positions. The outer circumferential surface of the central rod is shaped substantially in conformity with the inner circumferential surface of each of the electron gun units, and is also inclined to such an extent as is required to cause electron beams from each electron gun unit to converge exactly at a single point. Outside of the support holes of the support stand are rotatably pivoted support arms which act as a compensation member in locating the electron gun unit by the central rod and support hole when the cylindrical grid electrode surrounding the central rod is pressed from the side.

3,568,283

METAL CUTTING TOOL

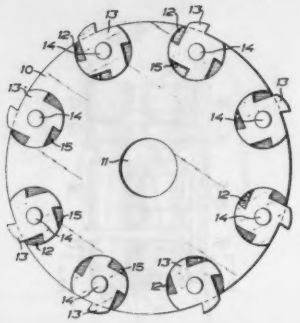
Edgar Wyss, Morigen, Switzerland, assignor to Vereinigte Drahtwerke A.G., Biel, Bern, Switzerland

Filed Jan. 22, 1969, Ser. No. 793,094
Claims priority, application Switzerland, Feb. 2, 1968, 1,594/68
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **4 Claims**



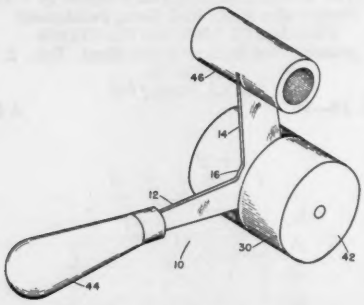
A spring tongue, integral with the toolholder, presses the upper end of a pin into and against the wall of a depression in the lower face of the cutting tip, the depression and the pin upper end being so shaped, dimensioned, and positioned that a resultant force exerted on the cutting tip prevents the latter from slipping.

3,568,284
CUTTING TOOLS
Tore Lunden, Knislinge, and Carl Astrand, Hanaskog, Sweden, assignors to Tarkett AB, Malmo, Sweden
Filed Apr. 8, 1968, Ser. No. 719,601
Claims priority, application Sweden, Apr. 10, 1967, 4,931/67; Nov. 29, 1967, 16,365/67
Int. Cl. B26d *1/00, 1/12*
U.S. Cl. 29—105 **11 Claims**



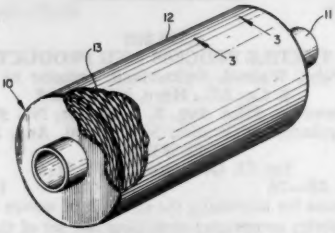
A cutting tool comprises one or more disk-shaped body members secured to a drive shaft and having recesses that intersect the body member periphery and each accommodates a cutting element which substantially lies within the space defined by the lateral planes of the associated body member, said cutting element projecting with a minor portion of its periphery beyond that of the body member and having on said projecting portion one or more cutting edges which can be exchanged for other cutting edges of the cutting element by rotation of the element in said recess and by fixation thereof in the angular position into which it has been set.

3,568,285
LAMINATE ROLLING DEVICE
Laurie O. Lieberg, 447 Meadow St., Fairfield, Conn. 06430
Filed Aug. 7, 1969, Ser. No. 848,280
Int. Cl. B05c *1/08*
U.S. Cl. 29—110.5 **6 Claims**



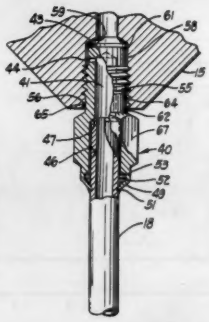
A rolling device for applying bonding pressure in the formation of special adhesively secured laminates. A heavy elongate pressure roller is mounted on a rigid frame having a first handle projecting rearwardly and a second handle projecting upwardly, both handles being fixedly secured to the frame, whereby longitudinal or forward and backward moving forces are applied to the first handle and simultaneously downward forces are applied to the second handle to obtain high bonding pressure on the surface of the outer layer of the laminate.

3,568,286
COMPRESSIBLE ROLL
William Campbell Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Continuation of abandoned application Ser. No. 588,174, Oct. 20, 1966. This application Apr. 17, 1968, Ser. No. 725,577
Int. Cl. B41l *23/18*; B60c *7/10*
U.S. Cl. 29—121 **16 Claims**



A novel product especially suitable as a printing roll is disclosed having elastomer-coated filaments (e.g. synthetic rubber coated glass filaments) wound on a core at an angle to the core and joined at the cross-over points by the elastomer. The filaments are wound in such a manner that void spaces are defined by the filaments.

3,568,287
METHOD OF MAKING CONNECTOR AND TUBE ASSEMBLY
Albert J. Balon, 9717 Greenhaven Parkway, Brecksville, Ohio 44141
Application Dec. 20, 1967, Ser. No. 692,073, now Patent No. 3,488,069, which is a division of application Ser. No. 501,545, Oct. 22, 1965, now Patent No. 3,460,804. Divided and this application Jan. 24, 1969, Ser. No. 793,864
Int. Cl. B21k *29/00*
U.S. Cl. 29—157 **3 Claims**

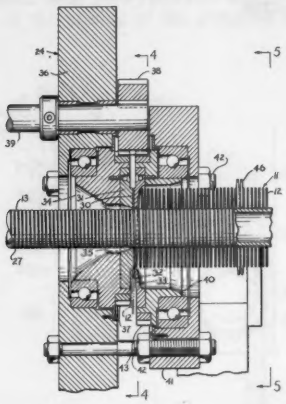


A process for making a rotatable, gastight joint between a tube and fitting including the steps of coating the tube with a sealant, inserting the tube in the bore of a fitting having a flange extending in spaced parallel relation with the tube, and spinning the fitting while exerting radial pressure on said flange to force said flange into biting engagement with said tube and to form a relief behind said engagement filled with said sealant.

3,568,288
APPARATUS AND METHOD FOR MAKING FINNED TUBING
Arvid C. K. Nihlen, Wooster, Ohio, assignor to The Falls Machine Company, Akron, Ohio
Filed July 12, 1968, Ser. No. 744,400
Int. Cl. B23p *15/16, 15/26*
U.S. Cl. 29—157.3 **18 Claims**

Method and means helically winds metal fin ribbon edgewise about a rotating, axially advancing tube into

tight pressure engagement of inner edge portion of ribbon, while simultaneously tapering and elongating ribbon to progressively outwardly increasing extents towards requisite maximum elongation at outer portion of fin ribbon. Helical fin secured to tube as by tensioned reception of inner fin edge and crimping tube stock against inner portions of fin ribbon, or otherwise attaching inner portions of fin ribbon tightly against tube.

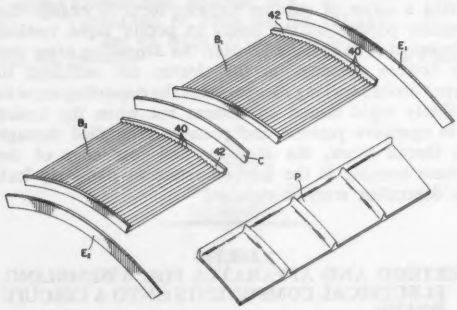


3,568,289

METHOD FOR BUILDING CARD SCREENS

Robert B. Jenkins, Sr., and Robert B. Jenkins, Jr., Gastonia, N.C., assignors to R. B. Jenkins & Co., Gastonia, N.C.

Filed July 11, 1968, Ser. No. 752,091
Int. Cl. B23p *15/12*
U.S. Cl. 29—160 **7 Claims**



At least one bar sub-assembly is formed comprising a series of spaced parallel bars secured between a pair of end walls, the sub-assembly is then positioned between a pair of side ribs and fastened thereto to form the completed card screen.

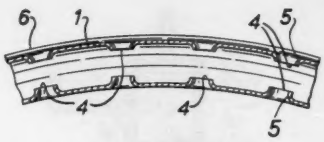
3,568,290

METHOD OF MAKING RACKETS HAVING METAL FRAMES

William C. Carlton, Ardleigh, England, assignor to The Dunlop Company Limited, London, England

Original application June 13, 1966, Ser. No. 557,159, now Patent No. 3,431,626, dated Mar. 11, 1969. Divided and this application Jan. 21, 1969, Ser. No. 792,293
Int. Cl. B23p *15/16, 17/00*
U.S. Cl. 29—163.5 **4 Claims**

An improved method for the manufacture of metal frames for badminton, tennis and other games rackets having flanged apertures for the strings thereof, starting from a metal tube having an 0.2 proof stress not exceeding 30 tons/square inch, maximum stress not exceeding 55 tons/square inch and an elongation on 2 inches of not less than 25%. After the flanged apertures have been formed in the tube and the latter bent into the shape of the racket frame, the frame is subjected to a hardening process to give the metal a 0.2% proof stress and a maximum stress each not less than 70 tons/square inch and an elongation on 2 inches of not more than 15%.

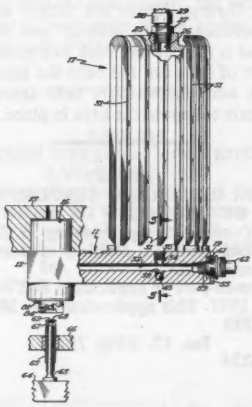


3,568,291

CRIMPING TOOL

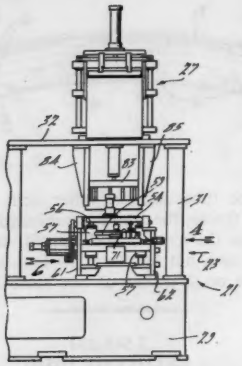
Thomas S. Zastrow, St. Paul, Minn., assignor to Remmele Engineering, Inc., St. Paul, Minn.

Filed Jan. 2, 1969, Ser. No. 788,551
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 **10 Claims**



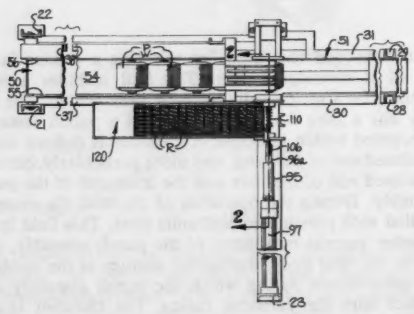
An improved tool used for crimping a primer in the end of a cartridge casing. The tool includes a body mounted on a reciprocally movable press platen. The tool body has a bore formed therein, and a punch assembly is mounted within the bore. A chamber is defined within the closed end of the bore, and more particularly, between the closed end of the bore and the inner end of the punch assembly. During the operation of the tool, the chamber is filled with pressurized hydraulic fluid. This fluid in the chamber permits movement of the punch assembly, relative to the tool body, during the portion of the stroke of the press platen during which the punch assembly is in contact with the cartridge casing. The chamber is connected with a pressurized fluid reservoir which, in the preferred embodiment, is mounted on and moves with the body. The reservoir is finned to assist cooling the fluid therein, and the fluid passages which interconnect the reservoir and the chamber are formed in the tool body so as to minimize the possibility of any leakage of pressurized fluid and to minimize maintenance of the tool.

3,568,292
DEVICE FOR ASSEMBLING VALVE PARTS
Cass S. Kasper, Grosse Pointe, Mich., assignor to Inter-Lakes Engineering Co., Mount Clemens, Mich.
Filed Aug. 15, 1969, Ser. No. 850,614
Int. Cl. B23p 19/04
U.S. Cl. 29—208 15 Claims



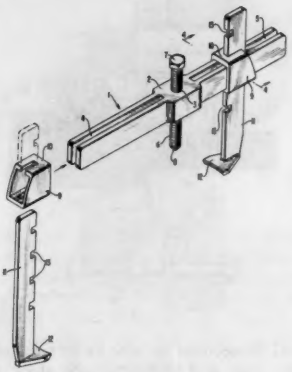
A machine for automatically assembling O-rings and spring retainer locking keys on valve stems of internal combustion engines. A cylinder head carrying valves is advanced to a station where, with the valve spring retainers held down, the head is rocked to a position for receiving the O-rings. These are picked up by spindles which rock between O-ring pick-up and mounting positions. The head is then swung back to a position to receive the keys. Pairs of keys are fed onto the inner of two telescoping quills and magnetically held thereon while the quills reciprocate to mount the keys in place.

3,568,293
MEANS FOR REPLACING SUPPORTING CORES OF PACKAGES OF YARN
William O. Young, Jr., Spartanburg, S.C., assignor to Butte Knitting Mills, a division of Jonathan Logan, Inc., Spartanburg, S.C.
Continuation-in-part of application Ser. No. 645,645, June 13, 1967. This application July 30, 1968, Ser. No. 755,759
Int. Cl. B23p 19/04
U.S. Cl. 29—234 12 Claims



Apparatus for replacing a supporting core of a core-supported wound package of yarn with a longitudinally compressible replacement core, in order to prepare the package of yarn for subsequent treatment such as a dyeing process or the like.

3,568,294
GEAR AND WHEEL PULLERS
Jacob K. Conner, 9421 Hensley Road, Manassas, Va. 22110
Filed July 22, 1969, Ser. No. 843,633
Int. Cl. B23p 19/04
U.S. Cl. 29—259 3 Claims

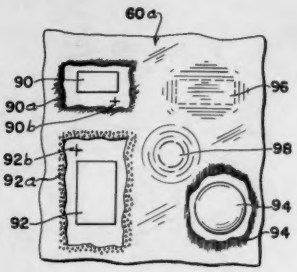


A wheel or gear puller comprising a base member having a vertically threaded central portion, the base member being provided at each end with open ended slots and a thread screw engaging the internal threads of the base member. Slidably mounted for lateral adjustment in each slot of the base member is a flattened sleeve having a rectangular bottom opening and a slotted top portion providing a shoulder for the support of a flat depending arm having an inwardly turned end for engaging the wheel or gear, the inner edge of each depending arm having a series of notches forming teeth to engage the shoulder portion of the sleeve to permit rapid vertical adjustment. The spacing between the depending arms and the bottom openings in the sleeves are sufficient to permit limited rocking movement of the depending arms to facilitate rapid lateral adjustment but when the device is in operative position and pressure is applied through the thread screw, the shoulder and rear edge of the bottom opening in the sleeve operate to positively lock the depending arms in position.

3,568,295
METHOD AND APPARATUS FOR ASSEMBLING ELECTRICAL COMPONENTS ONTO A CIRCUIT BOARD
Charles J. Moran, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Aug. 14, 1968, Ser. No. 752,706
Int. Cl. B23q 17/00
U.S. Cl. 29—407 4 Claims

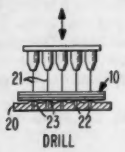
The disclosure relates to the assembly of electrical or electronic components onto conventional printed circuit boards already having the printed circuit thereon with holes therethrough. The boards are placed on a moving conveyor which stops for predetermined intervals at various stations as it moves down the conveyor. A mask template is placed over the board at each individual station which indicates by the cutout portion of the mask and the color coding combination which components are to be placed by the individual at that station onto that portion of the printed circuit board. The mask is removed before the board moves on to the next station where a different mask adapted to cover the components placed on the board at the previous station has cut out portions of its

own and color coding of its own so as to enable the placing of all of the components onto the printed circuit board in a minimum of time, and with a minimum possibility for mistake. In other words, a few components are placed on the board at each station by means of the mask template associated with that particular station. Upon the completion of the placing of the components upon the



board, the components are temporarily held in position on the board, the electrical connectors to each component trimmed to proper spaced relationship through the holes, with the connectors then soldered into place, the temporary holding means removed, and the entire board cleaned for a final application into the necessary electrical or electronic circuit arrangement.

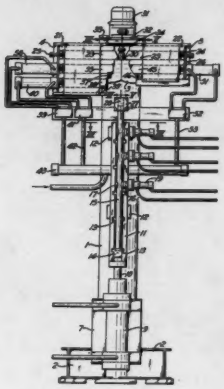
3,568,296
METHOD OF FORMING HOLES
Joseph G. Cutillo, Endwell, and John E. Linsky, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 14, 1969, Ser. No. 791,117
Int. Cl. B23p *17/00*; H05k *3/04*
U.S. Cl. 29—424 **8 Claims**



A process for drilling holes with reduced burr size at the exit edges of the holes which includes the steps of electrophoretically depositing a polymeric coating on the exit surface of the drilled member prior to drilling, curing the coating, drilling the holes and thereafter removing the cured coating.

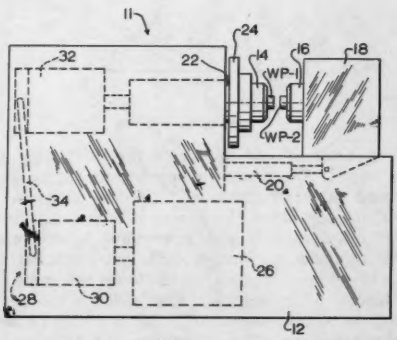
3,568,297
METHOD AND APPARATUS FOR SECURING HANDLES IN SLEDGE HEADS
Wilbert H. Woodings, Pittsburgh, and Thaddeus S. Skowron, Verona, Pa., assignors to Woodings-Verona Tool Works, Verona, Pa.
Filed July 31, 1969, Ser. No. 846,472
Int. Cl. B21k *5/14*
U.S. Cl. 29—429 **13 Claims**

After the slotted front end of a sledge handle has been started in the passage through a sledge head, the head is held stationary while the front end of the handle is pushed through it and out of its front. The projecting front end of the handle then is removed. The front end of the remainder of the handle is pushed against a stationary blade



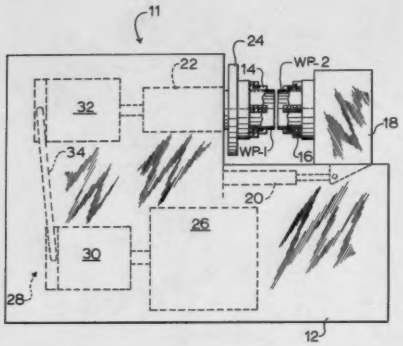
to open the front end of the handle slot. The handle them is moved forward against a stationary wooden wedge to force the wedge into the slot. Finally, the handle is pushed forward against a stationary metal wedge to force the handle onto that wedge also.

3,568,298
FRICTION WELDING MOLYBDENUM AND TUNGSTEN
Marion R. Calton, East Peoria, Henry J. Vermillion, Jr., Peoria, and Robert D. Williams, Toulon, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed July 15, 1968, Ser. No. 744,921
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 **5 Claims**



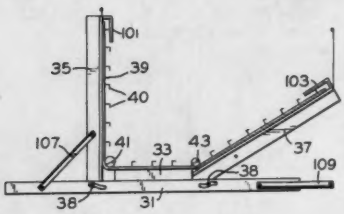
Friction welding molybdenum and tungsten materials, including inertia friction welding thereof, and further including speed, pressure and input energy parameters for the welding of these materials.

3,568,299
WELDING THIN WALL TUBES
Marion R. Calton, East Peoria, and James A. Willerton, Jr., Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 11, 1968, Ser. No. 736,039
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 9 Claims



Welding thin wall tubes of steel together or to other structures by friction welding at high speed including methods for determination of such speeds.

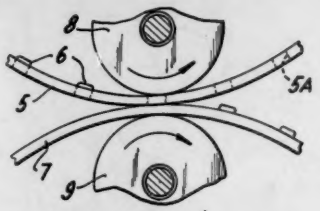
3,568,300
METHOD AND APPARATUS FOR FORMING SHIP HULLS
Arnold H. Zidell, Portland, Oreg., assignor to Zidell Explorations, Inc., Portland, Oreg.
Filed July 2, 1968, Ser. No. 742,070
Int. Cl. B23k 31/02
U.S. Cl. 29—471.1 6 Claims



A method of and apparatus for fabricating sections of a vessel. The method comprises providing singly reinforced plate structures and bending them to desired form, and thereafter (1) joining together such bent plate structures, optionally with intervening unbent reinforced plate structures, to form a shell, and thereafter erecting trussing within the shell to reinforce the same, or (2) fabricating a trussed unit, and welding the bent plate structures to the trussed unit, with or without intervening unbent reinforced plate structures, and welding the plate structures to one another.

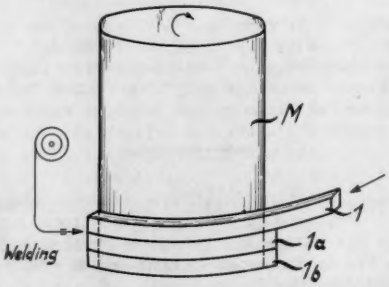
The apparatus comprises a stationary bed and one or more swing frames which are mounted so that they can be raised from lowered positions to erect positions to bend a singly reinforced plate about one or more mandrels which are supported in hold-down relation to a part of the plate structure.

3,568,301
BONDING OF PRECIOUS METAL TO A METAL SUBSTRATE AND PRODUCT THEREFOR
Akira Shibata, Tokyo, Japan, assignor to Chugai Electric Industrial Co., Ltd., Tokyo, Japan
Filed Jan. 2, 1969, Ser. No. 788,582
Claims priority, application Japan, Mar. 30, 1968, 43/20,714
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 9 Claims



A method is provided for producing a composite metal strip comprising a metal substrate with pieces of precious metal bonded thereto in spaced positions in the longitudinal direction of the strip. The method comprises feeding a cold metal substrate strip to a bonding station comprising a lower die support on which the strip is supported and a pressure-applying die disposed above said supporting die, progressively feeding pieces of precious metal to between said upper and lower dies, and immediately applying bonding pressure sequentially to each of said pieces sufficient to deform each piece at least 20% of its height while the piece is at a temperature above its recrystallization temperature but below its melting point, whereby each of the pieces is metallurgically bonded to the cold substrate strip in spaced positions along the strip with substantially no alloy diffusion zone at the bonding interface of the composite.

3,568,302
METHOD OF MAKING PRESSURE CONTAINERS
Werner Oehler and Werner Müller, Gummersbach, Rhineland, Germany, assignors to L. & C. Steinmuller G.m.b.H., Gummersbach, Germany
Filed Mar. 4, 1968, Ser. No. 710,250
Claims priority, application Germany, Mar. 3, 1967, St 26,581
Int. Cl. B23k 31/02
U.S. Cl. 29—477.3 4 Claims



A method of making pressure containers from tubular means, which includes the steps of winding the tubular

means in the form of an individual flexible tube or in the form of a group of superimposed flexible tubes around a core member having an outer contour corresponding to the inner contour of the container to be built up by said tubular means, and welding the thus formed windings together along their outer and inner contacting areas.

3,568,303

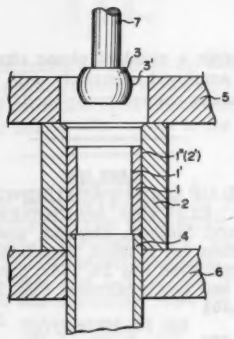
METHOD FOR WORKING A YOKE OF A SMALL-SIZED ELECTRIC MACHINE

Akio Ito, 93 Tsukasa-machi 2-chome, and Kazuhide Naruki, 45 Takara-machi 4-chome, both of Kariya-shi, Aichi-ken, Japan

Filed May 2, 1967, Ser. No. 635,573

Int. Cl. B23k *31/02*

U.S. Cl. 29—480 **1 Claim**



A method of forming a yoke for a small-sized electric machine in a plastic working operation to obtain its final inside and outside diameter dimensions comprised of the steps of forming a tubular wall section having an inside diameter and outside diameter less than the final inside diameter and outside diameter dimensions of the yoke, placing the tubular wall section within a laterally confined space having an inside diameter substantially equal to the final outside diameter of the yoke, exerting a transverse linear force uniformly about the interior of the tubular wall section for plastically deforming it outwardly whereby its inside diameter conforms with the final inside diameter of the yoke and its outside diameter conforms to the final outside diameter of the yoke.

Apparatus for forming a yoke of a small-sized electric machine comprised of a tubular die member having an inside diameter substantially equal to the final diameter of the yoke and a head member having at least a partly spherical surface. The spherical surface of the head member has a diameter substantially equal to the final inside diameter of the yoke and a rod member is associated with the head member. Accordingly, when a tubular wall section having an inside and an outside diameter smaller than the final inside and outside diameters of the yoke is inserted into the tubular die member and the head member is inserted within the tubular wall section and a radially outwardly directed linear force is exerted uniformly about the transverse interior surface of the tubular wall section; it is plasticly deformed and provided with its final inside and outside diameter dimensions.

3,568,304

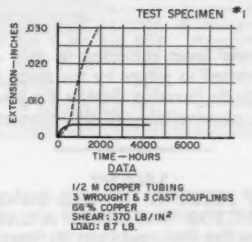
METHODS OF FORMING SOFT SOLDER JOINTS

Bertram C. Raynes, Pepper Pike, and Michael Pescatrice, Lakewood, Ohio, assignors to Nibco Inc., Elkhart, Ind.

Original application Nov. 22, 1965, Ser. No. 509,053, now Patent No. 3,418,179, dated Dec. 24, 1968. Divided and this application May 17, 1968, Ser. No. 729,981

Int. Cl. B23k *31/02*

U.S. Cl. 29—489 **14 Claims**



In the art of forming soft solder sweat joints connecting tubular copper members, the method of introducing into the joint area around one of the members a solder-reinforcing agent consisting of copper, and thereafter introducing a molten soft solder.

3,568,305

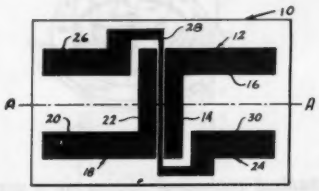
METHOD FOR PRODUCING A FIELD EFFECT DEVICE

John L. Janning, Dayton, Ohio, assignor to Ledex, Inc., Dayton, Ohio

Original application June 28, 1965, Ser. No. 467,649, now Patent No. 3,445,732. Divided and this application Dec. 2, 1968, Ser. No. 780,319

Int. Cl. B01j *17/00;* **H01g** *13/00*

U.S. Cl. 29—571 **6 Claims**



Method for producing a thin film field effect device having a gate element insulated by electrolytic action.

3,568,306

METHOD OF MAKING PHOTOVOLTAIC DEVICE BY ELECTROPLATING

Kazuo Yamashita, Toyonaka-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 20, 1966, Ser. No. 580,663

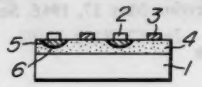
Claims priority, application Japan, Sept. 25, 1965, 40/59,271; Dec. 2, 1965, 40/75,452; June 22, 1966, 41/41,147

Int. Cl. B01j *17/34;* **C23b** *5/48;* **H01m** *15/02*

U.S. Cl. 29—572 **11 Claims**

A method of making a photovoltaic cell employing powdered polycrystalline photoelectric material, the method

comprising, forming at least one electrode on a photoelectric layer and electroplating a p-type determining metal, such as copper, on said electrode at least partially through the photoelectric layer whereby the portion of



said photoelectric layer subjected to said electroplating process is converted to p-type by the metal ions proceeding to the electrode, forming thereby a p-n junction thereabout, and a photovoltaic cell thus formed.

3,568,307

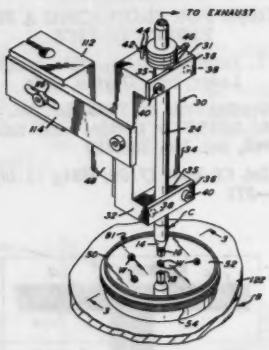
METHOD OF PICKING UP AND BONDING SEMICONDUCTOR WAFERS TO A CARRIER

Earl A. Zanger, San Jose, and Peter R. Szasz, Bear Valley, Calif., assignors to Kulicke and Soffa Industries, Inc., Fort Washington, Pa.

Application Aug. 9, 1967, Ser. No. 659,539, now Patent 3,458,102, which is a continuation of application Ser. No. 404,035, Oct. 15, 1964. Divided and this application Apr. 10, 1969, Ser. No. 815,117

Int. Cl. B01j *17/00*; H01l *7/02, 7/16*

U.S. Cl. 29—589 **5 Claims**



A mechanized method of picking up a partially preoriented semiconductor wafer from a plurality of semiconductor wafers on a tray, orienting the semiconductor wafer during the step of picking it up and simultaneously placing and bonding the semiconductor wafer on a carrier in a desired predetermined position.

3,568,308

METHOD AND MEANS FOR REFURBISHING AND CUSTOMIZING SERVICE CORD ASSEMBLIES

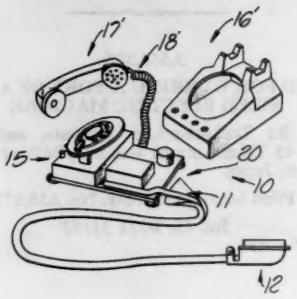
Edward S. Plaskon, Clifton, N.J., assignor to Walter A. Plummer, Sherman Oaks, Calif.

Filed July 30, 1968, Ser. No. 748,835

Int. Cl. H01s *4/00*

U.S. Cl. 29—592 **10 Claims**

A method and means for refurbishing, customizing and converting service cord assemblies and the like simply, economically and without need for tools, skilled services or interruption of service. Worn, damaged, discolored or non-harmonizing cord sheaths are quickly refurbished or replaced with a new sheath of selected color harmonizing with the old or some new decorative decor expeditiously and in a highly professional manner. The invention technique and advantages are typified by an appliance such as a telephone set and service cord



assembly wherein a standard phone chassis and service cord can be employed selectively with any of a wide range of matching colored cover shells and service cord sheaths.

3,568,309

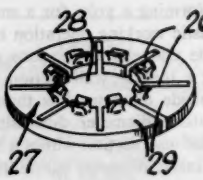
METHOD OF MANUFACTURING DYNAMO ELECTRIC MACHINES

Kenneth Preece, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Original application July 24, 1967, Ser. No. 655,493. Divided and this application Feb. 25, 1969, Ser. No. 816,861

Int. Cl. H01r *43/00*

U.S. Cl. 29—597 **2 Claims**



A dynamo electric machine including a rotor and a commutator rotatable with the rotor, the ends of the windings of the rotor being connected to the conductive segments of the commutator, and constituting part of each of the faces of the conductive segments of the commutator on which the brushes of the machine run in use.

3,568,310

HERMAPHRODITIC MULTI-CONTACT REED SWITCH

Ralph E. Neuber, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

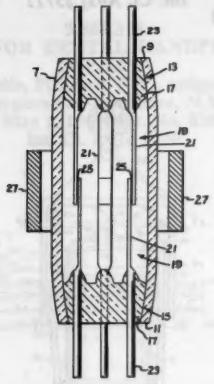
Original application Mar. 14, 1968, Ser. No. 713,216, now Patent No. 3,471,813, dated Oct. 7, 1969. Divided and this application Apr. 17, 1969, Ser. No. 816,990

Int. Cl. H01h *11/00*

U.S. Cl. 29—622 **2 Claims**

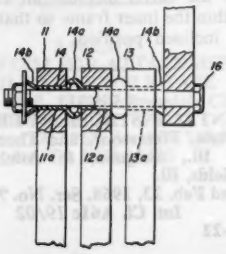
A hermaphroditic multi-contact reed switch includes a tubular envelope having a pair of substantially identical headers sealed into the opposite ends and contains an inert atmosphere. Each of the headers includes a plurality

of switch members having a magnetizable portion extending interiorly of the envelope and in longitudinally overlapping relationship with the magnetizable portion of the switch members of the opposite header. The longitudinal



overlapping magnetizable portions of the matching switch members of the opposing headers have a desired gap therebetween which is dependent upon the circumferential displacement of one header with respect to the other.

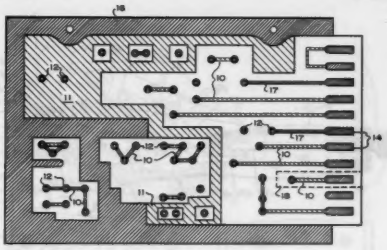
3,568,311
INSULATING AND SPACING ELECTRICALLY CONDUCTIVE MEMBERS
Elliott J. Lawton, Cleverdale, N.Y., assignor to General Electric Company
Original application Apr. 1, 1966, Ser. No. 539,487. Divided and this application Sept. 30, 1968, Ser. No. 763,852
Int. Cl. H01b *7/00*
U.S. Cl. 29—624 **2 Claims**



Means for the support of each of a plurality of spaced electrically conductive members in spaced, insulated relationship in an electrical apparatus is described. An elongated member of insulating material is employed passing through aligned apertures in the conductive members with portions of the insulating member between conductive members being expanded. The expanded portions cooperate either with each other or with an end support to firmly hold the conductive members in fixed spaced relationship.

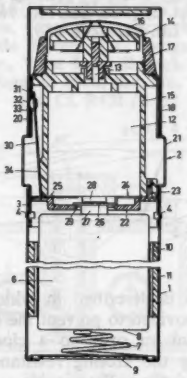
3,568,312
METHOD OF MAKING PRINTED CIRCUIT BOARDS
Robert A. Perricone, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 4, 1968, Ser. No. 765,262
Int. Cl. H05k *3/06*; B41m *3/08*
U.S. Cl. 29—625 **3 Claims**

A foil clad substrate having holes therethrough is selectively etched to provide desired electrical circuit paths on both sides of the substrate. The substrate is coated with an electroless metal, and a metal coating is selectively deposited on the substrate and within the holes in the substrate to provide electrical interconnections between the



circuit paths on both sides of the substrate. An encapsulant coating is then selectively deposited on the substrate to prevent the circuit paths from coming into contact with the surrounding environment.

3,568,313
ELECTRIC SHAVER
Beda Hutter, Rorschacherberg, Switzerland, assignor to August Belz, Goldach, Switzerland
Filed May 5, 1969, Ser. No. 821,747
Claims priority, application Switzerland, May 29, 1968, 7,997/68
Int. Cl. B26b *19/14*
U.S. Cl. 30—43.6 **8 Claims**

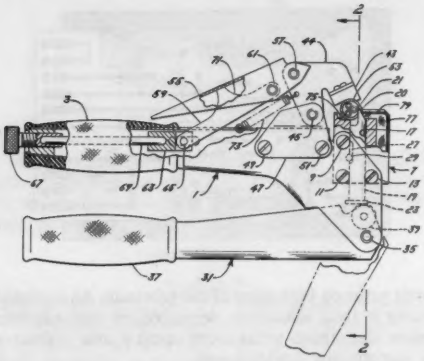


Battery-operated shaver comprises a two-part electrically conductive housing through which the circuit is closed by a spring contact that is free to move against one housing part when the cap is removed or, in a second embodiment, a ring is turned.

3,568,314
TOOL FOR SEVERING THE SPIRALLY WOUND ARMOR OF AN ELECTRICAL CABLE
Francis Allen Adams, 88 Manchester Ave., North Haledon, N.J. 07508
Filed Apr. 3, 1970, Ser. No. 25,428
Int. Cl. B26b *27/00*
U.S. Cl. 30—90.2 **13 Claims**

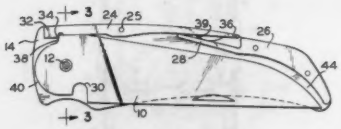
The tool has a pair of jaws for clamping a length of cable therebetween, a cutting element having a cutting edge, and cam means for moving the cutting element in

a bore in the tool so that the cutting edge moves in a plane substantially tangent to the inner periphery of the armor into engagement therewith to make a paring cut in the armor for severing a turn thereof. This arrangement



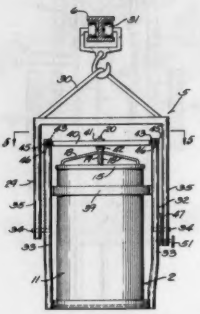
avoids damaging the insulation of the electrical conductors and bends the severed turn outwardly to facilitate removal of the severed portion of the armor from the insulated conductors.

3,568,315
FOLDING KNIFE HAVING CLOSURE ARRESTING MEANS
Franklin G. Smith, Portland, Oreg., assignor to Gerber Legendary Blades, Portland, Oreg.
Filed Oct. 2, 1968, Ser. No. 764,439
Int. Cl. B26b *1/02*
U.S. Cl. 30—161 **16 Claims**



A folding knife is described in which a closure arresting means is provided to prevent the knife blade from snapping shut from an open to a closed position, by abruptly increasing the closing resistance of the blade when it reaches an intermediate position at an acute angle with respect to the handle. The closure arresting means includes a spring biased stop member pivotally mounted intermediate its ends on the knife handle with one end engaging the blade and the other end engaging a leaf spring member. A shoulder portion of the stop engaging surface of such blade engages the stop member close to its pivot to provide the abrupt increase in closing resistance in the intermediate position of the blade. The stop member also forms part of a lock means which locks the blade in its fully open position by engagement of a latch portion on the end of such member within a notch in such blade. Release of the lock means is accomplished by pressing on the other end of the stop member to move such end against the force of a leaf spring member in engagement therewith. In addition the latch portion also engages the shoulder on the blade in its closed position to space the cutting edge of such blade from the spring member to prevent dulling.

3,568,316
APPARATUS FOR DRAINING WHEY FROM CHEESE
Otis O. Hensel, P.O. Box 186, Hustisford, Wis. 53034
Filed Jan. 21, 1969, Ser. No. 792,599
Int. Cl. A01j *25/11*
U.S. Cl. 31—48 **15 Claims**

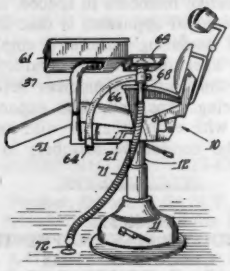


An apparatus for pressing and draining whey from cheese. The cheese to be treated is contained within a barrel enclosed with a perforated head or lid. A hoist unit lifts the barrel into a supporting cradle which rides on an overhead rail extending within the plant. The cradle comprises an outer frame suspended from the rail, and an inner frame containing the barrel is pivotally connected to the outer frame about a horizontal axis, so that the barrel can be tilted to thereby permit the whey to drain from the cheese through the perforated head.

A locking mechanism is included to lock the barrel in the upright position as well as to lock the barrel in the titled or inclined position.

The lid for the barrel includes an axial pin which is journalled within the inner frame so that the barrel, when the tilted or inclined position.

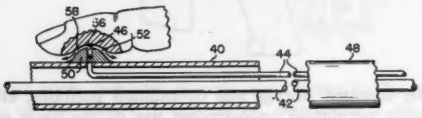
3,568,317
DENTAL INSTRUMENT CENTER
Milton L. Braun, Flossmoor, and Thomas W. Fleming, Glenwood, Ill., assignors to Auning Corporation, Olympia Fields, Ill.
Filed Feb. 23, 1968, Ser. No. 707,579
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 **3 Claims**



A dental instrument center which is constructed and arranged, in combination with a dental chair, to move upwardly and downwardly together with the upward and

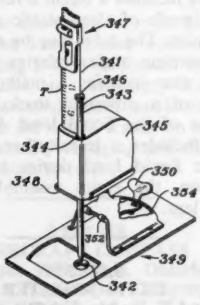
downward movement of the dental chair, as well as horizontally in an infinite number of positions, the operative mechanism being mounted below the seat of said dental chair.

3,568,318
CONTROL FOR DENTAL HANDPIECES AND THE LIKE
James C. Martin, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed May 1, 1969, Ser. No. 820,884
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 **12 Claims**



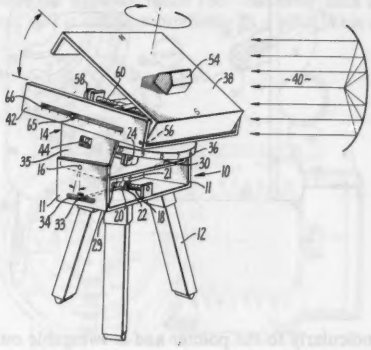
A finger operated means for controlling the speed of an air driven handpiece, flow of cooling water, and/or vacuum aspiration wherein bleed air from the power air line is fed to a pressure operated valve and then exhausted through a nozzle to atmosphere. Placing a thumb or finger over the exhaust nozzle creates a back pressure to operate the valves which control the speed of the handpiece, flow of cooling water and/or vacuum aspiration. The nozzle has a convex shape which seats the nozzle in the flesh of the thumb or finger overcoming the tendency of the finger to slip off the nozzle due to the low friction created by air exhausting through the nozzle and against the surface of the finger. This control nozzle can be mounted in any convenient location such as on the dental handpiece itself or on a dental mouth mirror.

3,568,319
LAYOUT SYSTEM FOR ATTACHMENTS FOR COILED, FLEXIBLE TAPE
Oswin C. Moll, 1640 Chippendale Circle, Bethlehem, Pa. 18017
Filed June 26, 1968, Ser. No. 740,269
Int. Cl. B43l *13/20*
U.S. Cl. 33—1 **22 Claims**



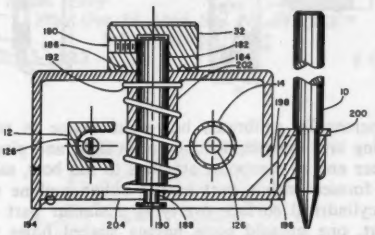
A layout tool employing retractable tapes and coupling means. A level is mounted on the tape or housing, and a plumb is attached to the tape for locating the plumb over a bench mark.

3,568,320
ARCHITECTURAL SHADOW INDICATOR
Eugene Clifford Potter, 101 Walnut St., San Francisco, Calif. 94118
Filed Mar. 12, 1969, Ser. No. 806,462
Int. Cl. G01c *1/00*
U.S. Cl. 33—1 **6 Claims**



There is disclosed an architectural shadow indicating apparatus, sometime referred to as a heliodon, which affords a compact and precise instrument for accurately showing the shadow pattern cast by a fixed light source representing the sun, on a structural model. The cast shadow can be determined for any hour of the day at any position of latitude and at any point in the seasonal inclination of the earth.

3,568,321
LOW COST PLOTTER
Charles H. Maps, West Long Branch, and Edward J. Paschetto, Little Silver, N.J., assignors to Electronic Associates, Inc., West Long Branch, N.J.
Filed Sept. 6, 1968, Ser. No. 757,881
Int. Cl. B43l *13/02*
U.S. Cl. 33—18 **1 Claim**

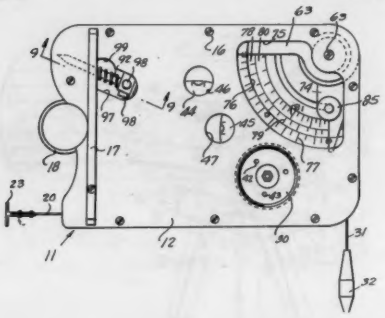


A low cost plotter having a plotting surface which serves as the main structural support for the plotter, an arm mounted for travel along opposite sides of the plotting surface, a pen holding mechanism mounted for movement along the arm, with the arm being driven at both sides of the surface by a dual bead belt drive to prevent arm skew and to ensure accurate squaring.

3,568,322
MEASURING INSTRUMENT
Garth A. Showers, Main St., Tannersville, N.Y. 12485
Filed Dec. 13, 1968, Ser. No. 783,559
Int. Cl. B43l *9/00;* **G01b** *3/10, 3/16*
U.S. Cl. 33—27 **5 Claims**

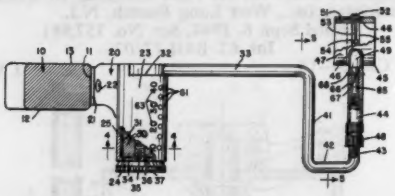
A combination measuring, marking, angle measuring, and arc-scribing instrument, including bubble levels. The instrument has a case containing a flexible measuring

tape, a plumb bob cord reel with cord and plumb bob attached, an angle scale, and adjacent distance scales arranged concentrically on an arc with pivoted pointer swingable thereover. The pointer has a clamp for securing it in adjusted position. A scriber arm is attached



perpendicularly to the pointer and is swingable outwardly relative to a side edge of the case. The case contains an extensible center pivot point which can be engaged in a surface to be scribed. The center pivot point is biased to a normally retracted position, but can be manually extended and rotated to lock it in extended position.

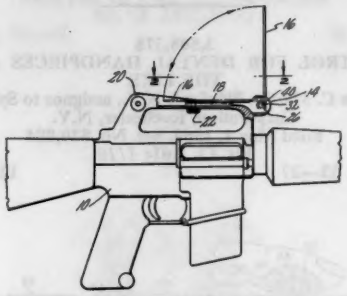
3,568,323
PERSONALLY CALIBRATED BOW SIGHT DEVICES
Jesse P. Lendway, 4259 Snail Lake Blvd., St. Paul, Minn. 55112
Filed Feb. 3, 1969, Ser. No. 802,720
Int. Cl. F41g *1/00, 5/00*
U.S. Cl. 33—46 **10 Claims**



A personally calibrated bow-sight device in which a swinging arm carrying at one end a sight and pivoted at its other end to a support attached to the bow, said arm being formed with a part having either a plane surface or a cylindrical surface overlying a similar part on the support, one of said parts having spaced holes therein and numerals associated therewith indicating distances of flight and the other part being in the form of a disc or a tube on which marks may be made through the appropriate holes in the first named part when the arm is in the proper position to cause the arrow to reach the target and when the target is sighted with reference to the sight.

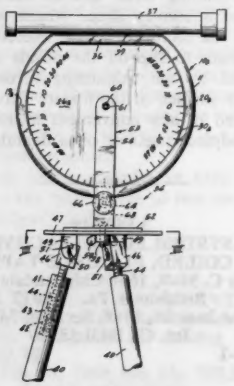
3,568,324
BATTLE SIGHT FOR AN AUXILIARY PROJECTILE LAUNCHER
John K. Jorczak, Springfield, Mass., assignor to Colt's Inc., Hartford, Conn.
Filed Jan. 9, 1969, Ser. No. 789,994
Int. Cl. F41g *1/48*
U.S. Cl. 33—47 **4 Claims**

A pivotable auxiliary sight assembly having a series of preselected range apertures with the sight assembly secured to the carrying handle of a portable firearm having auxiliary projectile launcher may be expeditiously and accurately aimed under battle field conditions. The auxiliary sight assembly including a sight element that has



stable detented storage and operational positions, either position permitting unobstructed use of the basic point fire sight of the firearm.

3,568,325
LIQUID LEVEL DEVICE
George William Baltz, R.R. 4, Pocahontas, Ark. 72455
Filed Nov. 17, 1969, Ser. No. 877,404
Int. Cl. G01c *1/02, 9/20*
U.S. Cl. 33—69 **1 Claim**

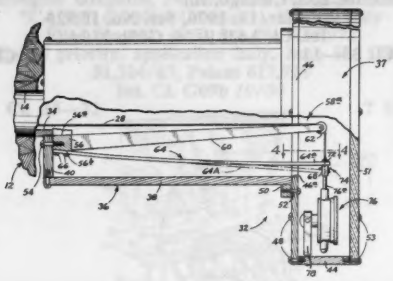


The disclosure includes a liquid level device comprising a circular tube made of clear plastic and partially filled with colored water. The tube may be mounted on a protractor for measuring angles relative to the horizontal. The disclosure also includes a method of ascertaining the water line of a proposed stock pond or the like through the use of the liquid level device. In addition the disclosure includes a transit theodolite which comprises a plastic liquid level device having a telescope mounted thereon, the entire assembly being mounted on adjustable legs.

3,568,326
EXTENSOMETER
Roland K. Dodds, 520 SW. 6th Ave., Portland, Oreg. 97204
Filed Aug. 12, 1968, Ser. No. 751,931
Int. Cl. G01b *5/02, 5/30*
U.S. Cl. 33—125 **4 Claims**

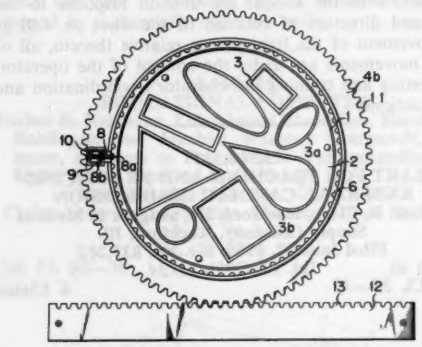
An extensometer for measuring movement in a land mass by measuring the displacement of wires anchored to the land mass. Each wire has an end that extends into

a casing in the extensometer, and the wire end is detachably fastened to a movable spring-biased ferrule which tenses the wire. A gauge in the casing, viewable from the



casing's front, indicates directly any change in the position of the ferrule produced by displacement of the wire.

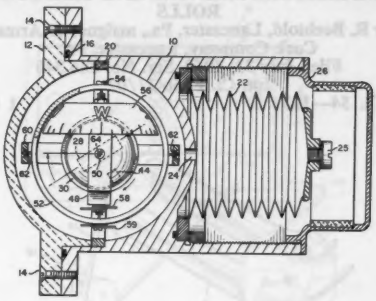
3,568,327
APPARATUS FOR DRAWING COMPOSITE PICTORIAL PATTERNS
Hideto Furuoka, Tokyo, Japan, assignor to Gakken Company Limited, Tokyo, Japan
Filed Nov. 6, 1968, Ser. No. 773,876
Claims priority, application Japan, Nov. 10, 1967, 42/94,450; June 8, 1968, 43/47,948; Oct. 31, 1968, 43/94,483
Int. Cl. B44d *3/30*
U.S. Cl. 33—174 **2 Claims**



An apparatus for drawing composite pictorial patterns is provided with an inner frame notched all along its periphery for holding a disk perforated with a prototype aperture or apertures, an outer keep frame having an inner circular guide rail disposed on the inside thereof so as rotatably to set the inner frame on said guide rail, and means for mutually engaging said frames by interlocking with each notch by turns.

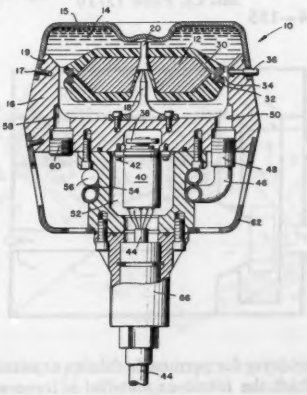
3,568,328
AIRCRAFT COMPASS
Edgar John Sharpe, Willowdale, Ontario, Canada, assignor to Patrick Harrison & Company Limited, Toronto, Ontario, Canada
Filed July 1, 1968, Ser. No. 741,429
Int. Cl. G01c *17/08*
U.S. Cl. 33—223 **4 Claims**

This invention relates to a magnetic compass especially suited for aircraft. The magnet is universally mounted so that it can rotate in azimuth and in dip and the azimuth axis is made pendulous so that it is normally vertical. With compasses of this kind the pendulous azimuth axis tends to swing out of control to beyond the 90° dip position as the aircraft turns. If the dip of the magnet exceeds 90°, the universal mounting means for the magnet operate to bring the magnet around into the resultant magnetic field and at the same time they turn the compass card of the magnet through 180°. The result is that the compass reads 180° out after such a misalignment and is entirely unreliable to a pilot. This inven-



tion overcomes this difficulty by counteracting the magnet about its dip axis by means of a weight. The weight is designed to counteract dip and has a magnitude sufficient to prevent the magnet from exceeding the 90° dip position in an aircraft turn. A compass constructed according to the invention is very much more stable than the standard aircraft magnetic compass. It also has better characteristics from a vibration point of view when used in a heavy vibration machine, such as a helicopter.

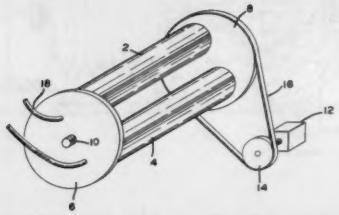
3,568,329
MAGNETIC FLUID COMPASS
Leslie T. Campbell, Lakewood, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Oct. 28, 1968, Ser. No. 771,223
Int. Cl. G01c *17/08*
U.S. Cl. 33—223 **5 Claims**



A magnetic compass which includes a bar magnet; a fluid compartment which encloses the magnet; a needle support means mounted within the compartment so as to

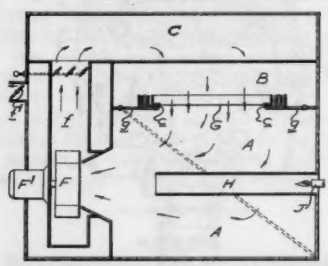
support the magnet for rotation in a horizontal plane; and buoyant material mounted on the magnet for supporting the magnet in the fluid with a slight negative buoyancy so that friction at the needle support is at a minimum; and a small slave bar magnet rotatably mounted to the compartment and in axial alignment with the large bar magnet so as to follow the movements of the large bar magnet.

3,568,330
TEMPERATURE MAINTAINING TRANSPORT ROLLS
Oliver R. Bechtold, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed July 31, 1969, Ser. No. 846,340
Int. Cl. F26b *11/02*
U.S. Cl. 34—113 **1 Claim**



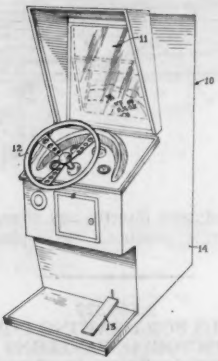
The apparatus involves two heated rolls which are suspended between two large end supports. The sheet which is heated by the rolls passes around the rolls. Depending upon the positioning of the rolls relative to the path of movement of the sheet, the amount of contact that the sheet makes with the rolls may be varied. This variation of contact with the rolls will cause variations in the temperature to which the sheet is heated. Movement of the rolls relative to the pathway of the sheet is affected by the end supports which are capable of movement to position the rolls in different positions.

3,568,331
SUCTION DRYING APPARATUS
Harry W. Loveday, Blackburn, England, assignor to Greenbank Engineering Company Limited, Blackburn, England
Filed Jan. 8, 1969, Ser. No. 789,910
Int. Cl. F26b *13/10*
U.S. Cl. 34—155 **7 Claims**



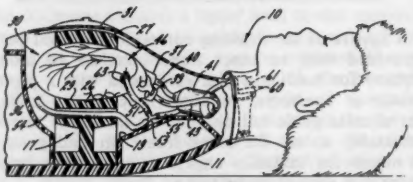
A suction dryer for permeable fabrics or material in web form in which the fabric or material is traversed through the dryer on an endless perforated conveyor, which divides the drying chamber into two compartments, one compartment being a pressure compartment and the other a suction compartment sealing means being provided for the conveyor at both the inlet and discharge ends.

3,568,332
SIMULATED DRIVING APPARATUS
Jerry C. Koci, Barrington, Ill., and Albert L. Schlapa, Fort Atkinson, Wis., assignors to Chicago Dynamic Industries, Inc., Chicago, Ill.
Filed Mar. 12, 1970, Ser. No. 18,923
Int. Cl. A63f *9/14*; G09b *9/04*
U.S. Cl. 35—11 **8 Claims**



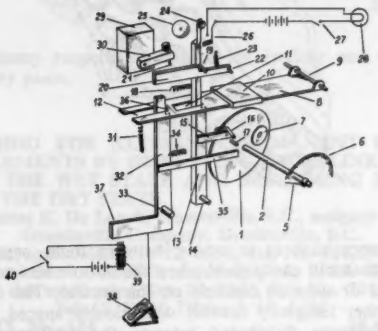
An apparatus for producing upon a screen an illusion of a panoramic roadway and simulated vehicle images moving competitively thereover as well as a steerable simulated vehicle image under the control of an operator of the apparatus. These images are created by a light source projected through a plurality of rotating transparent discs, with the images movable in response to the speed and direction of rotation of the discs as well as the movement of the light source relative thereto, all of which movements are under the control of the operator, thus testing and training the operator's coordination and reflex actions.

3,568,333
HEART FOR TEACHING AND PRACTICING EXTERNAL CARDIAC COMPRESSION
Roland R. Clark, Rockford, Ill., assignor to Medical Supply Company, Rockford, Ill.
Filed June 27, 1969, Ser. No. 837,202
Int. Cl. G09b *23/34*
U.S. Cl. 35—17 **6 Claims**



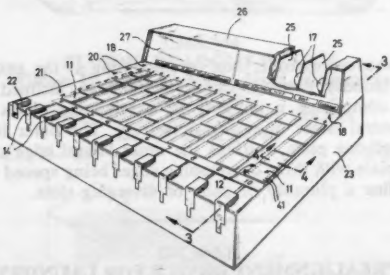
A simulated molded heat located between the sternum and spine of a simulated thorax unit is squeezed and released as compressive forces are alternately applied to and released from the thorax unit. The heart includes a liquid chamber from which blood-colored liquid is pumped when the heart is compressed for flow into a transparent circulatory system, and includes an air chamber from which air pulses are emitted for actuating a pressure gage and pulsating a simulated carotid artery. The air chamber is formed within a separately molded insert adapted to interfit with the main portion of the heart defining the liquid chamber.

3,568,334
APPARATUS FOR MEASURING THE PHYSIOLOGICAL REACTION TIME TO A VISUAL OR ACOUSTIC STIMULUS
Pietrangelo Gregorio, Naples, Italy, assignor to s.r.l. "CAEM" (Limited Company), Naples, Italy
Filed June 11, 1968, Ser. No. 736,072
Claims priority, application Italy, June 13, 1967, 31,324/67, Patent 817,919
Int. Cl. G09b *19/00*
U.S. Cl. 35—22 7 Claims



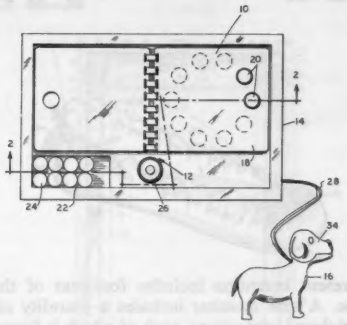
A device for testing the reaction time of an individual including a rotary body rotatable about an axis spaced somewhat from its center of gravity. Timer operated release means holds the body in a position of unstable equilibrium until such time as a visual or acoustic signal is rendered when the body is released. A pointer integral with the body axle registers the angle of rotation and hence the time interval of rotation when the body is stopped by a manually operated brake.

3,568,335
EDUCATIONAL COMPUTER
Euchar R. Nehmann, Leinfelden-Unteraichen, Horst Link, Boblingen, and Joachim Weimer, Stuttgart-N, Germany, assignors to Franckh'sche Verlagshandlung W. Keller & Co., Stuttgart-O, Germany
Filed Oct. 28, 1968, Ser. No. 771,189
Claims priority, application Germany, Feb. 7, 1968, P 16 78 336.1
Int. Cl. G09b *5/00*
U.S. Cl. 35—30 16 Claims



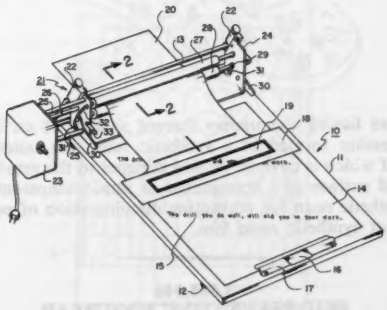
An educational computer comprising a plurality of connecting groups, each of the connecting groups including a plurality of connecting points and sets of the connecting groups being arranged in rows on a programming board; and source of electricity; a plurality of indicators each associated with the set of connecting groups in one of the rows and connected with the source of electricity; a key connected with the source of electricity and the connecting groups; a plurality of wires for connecting the plurality of indicators with the connecting groups; and a plurality of movable contactors each associated with the set of connecting groups in one of the rows to selectively connect adjacent connecting points in a connecting group.

3,568,336
REMOTE-CONTROLLED EDUCATIONAL GAME
Sid Noble, West Orange, N.J., assignor to Remco Industries, Inc., Harrison, N.J.
Filed May 8, 1969, Ser. No. 822,988
Int. Cl. A63h *33/26*
U.S. Cl. 35—32 10 Claims



A remote-controlled educational game with an answering toy, such as a dog, is provided. The remote-control unit transmits electrical pulses to the toy. Actions of the child, such as arranging pegs in the control unit, determine the number of pulses sent for each cycle of operation of the actuating switch. Each pulse received by the toy actuates a cycle-timer in the toy for one cycle of operation. A cycle of operation would include, for example, having the dog's mouth open and emit a barking sound. Thus, the dog would bark once for each pulse, that is, would bark as many times as had been predetermined by the child's actions.

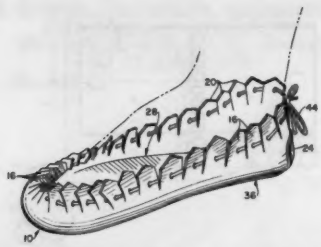
3,568,337
TYPIST PACESETTING DEVICE
Walter M. Sharp, Jr., Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of application Ser. No. 638,543, May 15, 1967. This application Apr. 17, 1968, Ser. No. 729,865
Int. Cl. G09b *17/04*
U.S. Cl. 35—35 10 Claims



A pacesetting apparatus for improving typing skills including a means for affecting relative motion between a copy sheet and a masking member having an elongated opening or transparent window at a constant predetermined rate. Various type symbols are arranged on the copy sheet in lines which slant from left to right. The various symbols successively become visible through the opening

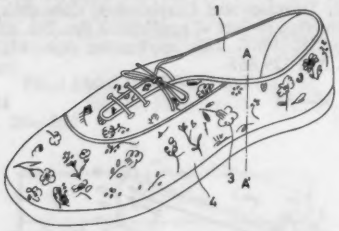
or transparent window for a predetermined period of time as the masking member achieves relative motion with respect to the copy sheet.

3,568,338
MOCCASIN FOOTWEAR AND METHOD OF MANUFACTURE
Martin S. Nadler, 208 Alpine Drive, Paramus, N.J. 07652
Filed Oct. 7, 1969, Ser. No. 864,470
Int. Cl. A43b *3/14*; A43d *9/00*
U.S. Cl. 36—11 **7 Claims**



The present invention includes footwear of the moccasin type. A sole member includes a plurality of juxtaposed peripheral projections, each of which is formed with an opening therethrough. A draw cord extends in tension through each of the openings such that the projections are positioned in overlapping relationship over and in contact with the toes of a user of the footwear.

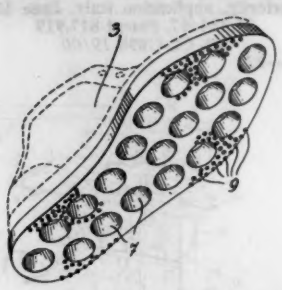
3,568,339
SHOES
Masao Hara, Tokyo, and Eiji Yabuki, Buhei Mahide, and Hideaki Yoshida, Tochigi-ken, Japan, assignors to Harold Fleming trustee, Dallas, Tex.
Filed Nov. 14, 1968, Ser. No. 775,736
Claims priority, application Japan, Nov. 18, 1967, 42/96,804; Apr. 4, 1968, 43/26,396; June 7, 1968, 43/47,169, 43/47,170
Int. Cl. A43b *1/10, 23/00*
U.S. Cl. 36—2.5 **7 Claims**



Shoes having the uppers thereof shaped of an imitation leather formed of a synthetic resin, the outer surface of which is covered by and adhered to the previously printed surface of a transparent or semi-transparent film of synthetic resin for preventing discolouration of printed layer of synthetic resin film.

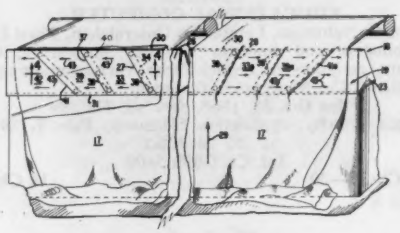
3,568,340
SKID-PREVENTING FOOTWEAR
Denys Gardner, Acton Vale, Quebec, Canada, assignor to The Acton Rubber Ltd., Acton Vale, Quebec, Canada
Filed Apr. 25, 1969, Ser. No. 819,297
Int. Cl. A43b *13/06*
U.S. Cl. 36—32 **5 Claims**

A skid-preventing footwear formed of a thick outsole made of soft sponge or microcellular rubber and having opened cavities so that it will easily yield under the weight of a wearer. The cavities have apertures opening on the ground-contacting side of the outsole and each has a depth extending over the major portion of the thickness of the outsole. The cavities are spaced from one another



a distance such as to create, between them, separating walls that will easily yield when the outsole sets on a flat surface or onto an obstacle on the ground. The outsole is further integrally formed with closely spaced, short, protuberances distributed between the cavities on the ground-contacting side of the outsole.

3,568,341
FEEDER WITH DIVERGING SLOTS
Benjamin Alvin Buss, East Moline, Ill., assignor to Ametek, Inc., New York, N.Y.
Filed Jan. 29, 1970, Ser. No. 6,710
Int. Cl. D06f *67/04*
U.S. Cl. 38—143 **6 Claims**

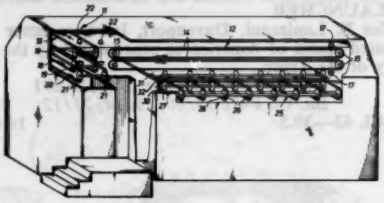


A vacuum spreader box for mounting at the entrance of a laundry flatwork ironer includes an inclined feed plate comprising a plurality of overlapping plates with the lateral edges diverging outwardly. The outer lateral edge of one plate overlaps the inner lateral edge of the next plate with these overlapping edges being spaced apart to define a plurality of pairs of diverging slots.

3,568,342
PREALIGNMENT DEVICE FOR LAUNDRY MANGLES
Wilhelm Betsch, Hoefigheim, Germany, assignor to Hans F. Arendt Maschinenbau, Bietigheim, Wurttemberg, Germany
Filed Dec. 6, 1968, Ser. No. 781,932
Int. Cl. D06f *67/04*
U.S. Cl. 38—143 **13 Claims**

This invention is directed to a prealignment device for laundry mangles in which a piece of laundry is first picked up and straightened by opposed sets of belts and its leading end is then directed downwardly between the open jaws of a clamp, after which the clamp closes and a tucker

blade moves laterally to displace the trailing end of the laundry piece onto a lateral conveyor belt, after which



the clamp reopens to release the leading end of the laundry piece.

3,568,343

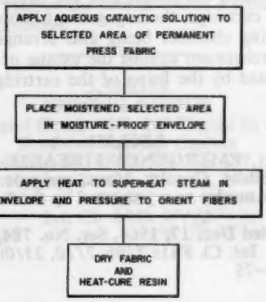
METHOD FOR ALTERING PERMANENT PRESS GARMENTS BY DISRUPTING CROSS-LINKAGES IN THE WET STATE AND REFORMING THEM IN THE DRY STATE

James R. De Loach, Warrenville, S.C., assignor to Graniteville Company, Graniteville, S.C.

Original application Oct. 12, 1966, Ser. No. 586,199, now Patent No. 3,453,747, dated July 8, 1969. Divided and this application Oct. 29, 1968, Ser. No. 771,499

Int. Cl. D06f; D06m *1/18, 1/24*

U.S. Cl. 38—144 **10 Claims**


APPLY AQUEOUS CATALYTIC SOLUTION TO SELECTED AREA OF PERMANENT PRESS FABRIC
PLACE MOISTENED SELECTED AREA IN MOISTURE-PROOF ENVELOPE
APPLY HEAT TO SUPERHEAT STEAM IN ENVELOPE AND PRESSURE TO ORIENT FIBERS
DRY FABRIC AND HEAT-CURE RESIN

This invention relates to a process for altering garments, and more particularly to a process for altering creased garments made from a permanent press fabric wherein an undesired crease may be removed and a new crease made in the fabric after altering the garment.

3,568,344

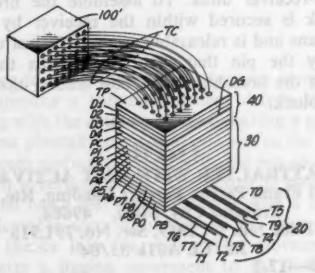
FLUIDIC READOUT DEVICE

William H. King, Riverside, Calif., assignor to Bourns, Inc.

Filed Aug. 15, 1969, Ser. No. 850,427

Int. Cl. G09f *11/00*

U.S. Cl. 40—28 **5 Claims**



A device arranged to receive fluid-pressure signals via any of ten fluid lines denominated 0 through 9 and in response thereto create a visible representation of the decimal number corresponding to the line currently providing the fluid-pressure signal.

3,568,345

DISPLAY DEVICES

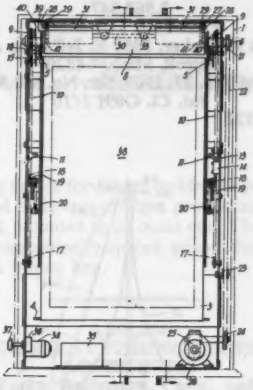
Maurice Grosse, London N. 10, England

Filed July 24, 1968, Ser. No. 747,205

Claims priority, application Great Britain, Aug. 2, 1967, 35,588/67

Int. Cl. G09f *11/32*

U.S. Cl. 40—36 **9 Claims**



A device for displaying both sides of a series of poster-like sheets in a continuously repeated manner, the sheets being positively engaged and transferred, one at a time, around a roller from a viewing position to the rear of a stack of the sheets and the device including electrically-operated delay mechanism to govern the length of viewing time for each side of each sheet.

3,568,346

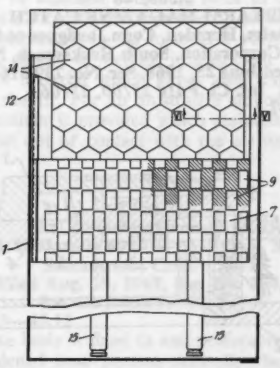
SIGN FOR CONVEYING INFORMATION TO AN OBSERVER MOVING WITH RESPECT THERETO

Edwin James Smith, North Scale, Barrow in Furness, England, assignor to Traversign Limited, Manchester, England

Filed July 22, 1968, Ser. No. 746,329

Int. Cl. G09f *7/00*

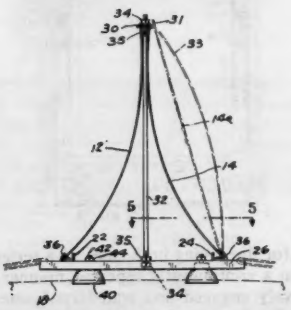
U.S. Cl. 40—125 **3 Claims**



A sign for presenting information to an observer of the sign moving with respect thereto which comprises a housing, a plurality of identical optical objects linearly disposed within and secured to the housing, each optical

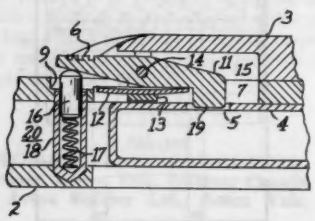
object being a representation of the information the sign is to present, a plurality of lenses linearly disposed within and secured to the housing, each of said lenses being in registry with one of said optical objects and each of said optical objects being in the focal plane of the lens with which it is in registry, and a light source to illuminate said optical objects, so that an observer moving linearly past the sign has the impression that only one representation of the information is seen, which representation appears to be stationary with respect to the observer's movement.

3,568,347
VEHICLE TOP SIGN
Fodes F. Sheker, 3000 E. Jefferson Ave., Detroit, Mich. 48207
Filed Feb. 27, 1969, Ser. No. 802,902
Int. Cl. G09f *1/10*
U.S. Cl. 40—125 **5 Claims**



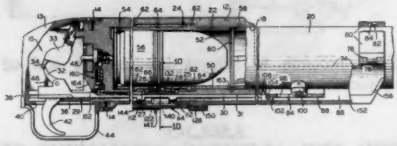
A two-panel display device for mounting on a vehicle roof with a holding frame of two generally parallel channels with upturned edges and a third M-shaped channel positioned above, laterally between and parallel to the other channels. Cross braces are connected to the two channels and tie rods connect the cross braces to the third channel. Two normally flat, resilient and flexible display panels are each bowed inwardly toward each other and inserted between the third channel and one of the other channels so that they are urged, due to their inherent resiliency, into firm engagement with and held in position by the channels.

3,568,348
FIREARM MAGAZINE CATCH
Gary Wilhelm, Hamden, Conn., assignor to Stoeger Arms Corporation, South Hackensack, N.J.
Filed June 25, 1968, Ser. No. 739,816
Int. Cl. F41c *25/00, 25/06*
U.S. Cl. 42—7 **2 Claims**



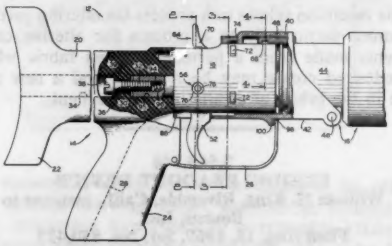
Disclosed is a spring biased pivotal magazine catch for an automatic pistol mounted in a side wall of the frame on a pin about which the catch pivots and which pin locks the parts in operable position.

3,568,349
TRIGGER-OPERATED MAGAZINE INDEXING MEANS FOR A SEMIAUTOMATIC GRENADE LAUNCHER
Charles E. Lanizzani, Davenport, Iowa, assignor to the United States of America as represented by the Secretary of the Army
Filed May 12, 1969, Ser. No. 823,891
Int. Cl. F41c *13/00, 19/14, 21/12*
U.S. Cl. 42—39.5 **14 Claims**



A semiautomatic grenade launcher wherein each of the individual firing chambers in a transversely fed magazine are successively retained in firing alignment with a longitudinally slidable barrel first by a detent biased into releasable engagement with the magazine and thereafter by the engagement of the breech end of the barrel in the firing chamber in alignment therewith, and wherein the firing retraction of the trigger is utilized to function separate cams for accomplishing the required actuation of both the barrel and the detent prior to the firing of the cartridge, the engagement between the barrel and each firing chamber being also arranged to seal the junction therebetween against the escape of the discharge gases generated by the firing of the cartridge.

3,568,350
EMERGENCY FIREARM
Stanley D. Silsby, Granby, Mass., assignor to the United States of America as represented by the Secretary of the Army
Filed Dec. 17, 1968, Ser. No. 784,397
Int. Cl. F41c *7/06, 7/10, 23/00*
U.S. Cl. 42—75 **5 Claims**

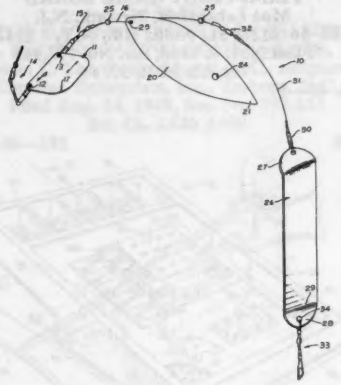


A survival firearm is separable into stock, breechblock and barrel-receiver units. To assemble the firearm the breechblock is secured within the receiver by lug and groove means and is releasably secured against unlocking rotation by the pin that pivotally mounts the trigger and sear in the breechblock. A bolt secures the stock to the breechblock.

3,568,351
FISH ATTRACTER WITH BAIT ACTIVATOR
Earl Frank Perrin, Perrin's Landing, Rte. 3, Traverse City, Mich. 49684
Filed Jan. 17, 1969, Ser. No. 791,918
Int. Cl. A01k *85/04*
U.S. Cl. 43—17.1 **2 Claims**

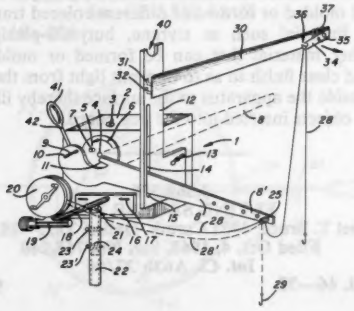
An attracter and activator comprising, in order along its elongated overall extent, three appropriately plated components, i.e., a leading rudder or keel member, an

intermediate blade having a sonic hole, and a rear activator blade having oppositely bent leading and trailing ends. These components are flexibly articulated by steel



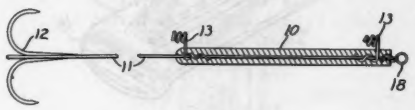
leader, swivel and snap members, including steel snaps at the front and rear of the lure at which a trolling line and a hook are connected.

3,568,352
FISHING DEVICE
Wilmot George Hill, 269 Raglan St. S., Renfrew, Ontario, Canada
Filed June 27, 1969, Ser. No. 837,193
Claims priority, application Canada, Nov. 29, 1968, 36,526
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **11 Claims**



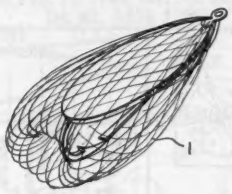
A device for automatically playing one or more fishing lines comprising a rotating member driven by a motor in a casing with the rotating member having a pin thereon, and an arm pivotally secured at one end to the casing and having a cam surface engageable by the pin so as to move the arm in a vertical plane. The casing is mounted on a support and has a reel secured thereto with a line extending to releasable securing means on the free end of the arm and thence into the water. The movement of the arm imparts a jigging movement to the line. Brackets may be added to the casing to hold a fishing pole carrying a fishing reel, and an additional detachable arm may project from the device to which the fishing line may be removably secured to impart various and selectable movements to the fishing line. A signal flag is secured to the device and associated with the fishing line in a manner to indicate the bite of a fish.

3,568,353
FISHING TACKLE RETRIEVER
Earnest B. Kilgore, 413 W. Ridge Road, Moses Lake, Wash. 98837
Filed July 14, 1969, Ser. No. 841,366
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **8 Claims**



A retrieving device for fishing tackle comprising an elongated weighted body supporting a protruding flexible wire having a hook mounted to its outer end. The body is provided with longitudinally-spaced guides for selective attachment to a fishing line.

3,568,354
LUMINESCENT FISHING LURES AND ACCESSORIES
Edward M. Yacko, Bridgeport, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Feb. 7, 1969, Ser. No. 797,543
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **4 Claims**

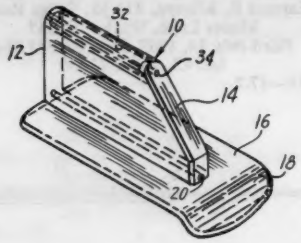


This disclosure relates to fishing lures and materials which can be attached to fishing lures to cause them to glow in the dark with the objective of attracting fish. The attracting element is in the form of a polyolefinic plastic film, rope, thread or netting impregnated with an oxyluminescent material which glows after exposure to the oxygen in the air. For an illustrative embodiment, a protective container is provided which maintains a supply of the material out of contact with the air until it is to be used.

3,568,355
SLIDING FISHING SINKER
Jack V. Hassell, 902 Del Paso Blvd., Space 3, Sacramento, Calif. 95815
Filed Aug. 29, 1969, Ser. No. 854,043
Int. Cl. A01k *93/00, 95/00*
U.S. Cl. 43—43.13 **7 Claims**

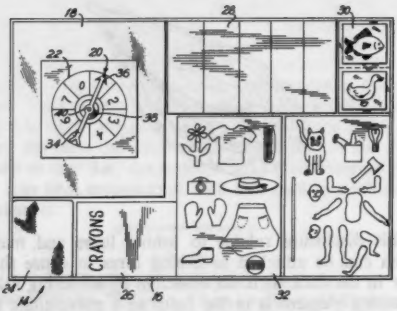
A rib-like body is fixed to and preferably integral with a thin widened base portion centrally thereof whereby the device is of elongated T-shaped cross-section. Two openings extend longitudinally through the body adjacent vertically spaced edges thereof, one of these openings being adapted to receive one or more lead weights and the fishing line being adapted to extend through the other

opening, namely the one adjacent the base. The swivel and leader are connected to such line after it is threaded through its opennig. When so used, the weighted edge portion of the body will be at the bottom of the device. The line may be passed through the opening which usually



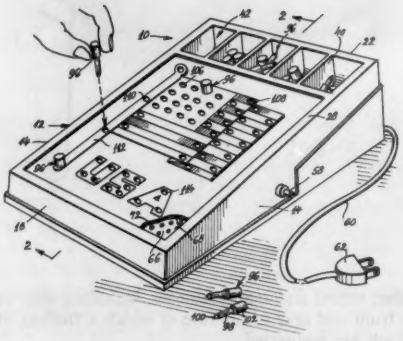
carries the weights and the latter are eliminated, in which case the base will be at the bottom of the device so that the latter may be used in trolling, one end of the base projecting beyond the body to tend to draw the device downwardly from the surface of the water.

3,568,356
TELEVISION COORDINATED PLAY KIT
Morton R. Berman, Brooklyn, N.Y., assignor to Screen Magic Inc., Hempstead, N.Y.
Filed Feb. 3, 1969, Ser. No. 795,870
Int. Cl. A63h *33/14*
U.S. Cl. 46—16 **24 Claims**



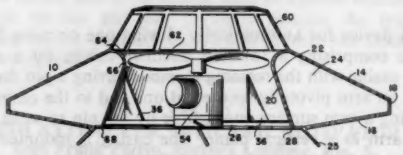
A play kit for coordinated use with a television series for children. The play kit includes a soft limp transparent film (hereinafter called the "panel") which is tacky on both broad surfaces thereof so that it can be self-adherent to the transparent front of a television set whereby moving images on the television screen can be viewed therethrough. The kit further includes opaque forms of a soft limp plastic sheet tacky on both broad surfaces thereof so that they can be reversibly self-adherent to the exposed front surface of the panel. Additionally, the kit includes crayons and a spinner. A child watching a television play follows the conversation of the characters with or without a running action commentary and uses the crayons and forms to add objects to the panel which are coordinated with the moving images displayed on the screen. In addition, the kit includes a playboard which duplicates a background set shown in the television program and on which the child can apply crayon markings and forms to match those on the panel. Alternately, the panel can be stripped from the television screen and transferred to the playboard.

3,568,357
PEG-A-LIGHT GAME BOARD
Moe Lebensfeld, Newark, N.J.
(82–56 213th St., Nollis Hill, N.Y. 11427)
Filed Nov. 4, 1968, Ser. No. 772,965
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **1 Claim**



Game apparatus for forming pictures or playing games by means of illuminated pegs or molded objects inserted in holes of a peg board. The apparatus utilizes a perforated peg board supported above an incandescent lamp operatively connected to an electric source. A punctured lining pad adhered to the rear of the peg board serves to normally close the perforations of the peg board. The lining is formed of a plastic or rubber material that has a memory for returning to its original form after deformation, the punctures close when the pegs are removed. The pegs or objects such as checkers, chess men, etc., are transparent and molded or formed of different colored transparent plastic material such as styrene, butyrate-plexiglass or any other material that can be formed or molded to a polished clear finish so as to transmit light from the lighted lamp inside the apparatus to the surface thereby illuminating the objects inserted into the peg board.

3,568,358
FLYING SAUCER TOY
Joel T. Bruce, 4401 Caruth, Dallas, Tex. 75225
Filed Oct. 4, 1968, Ser. No. 765,240
Int. Cl. A63h *27/00*
U.S. Cl. 46—75 **9 Claims**



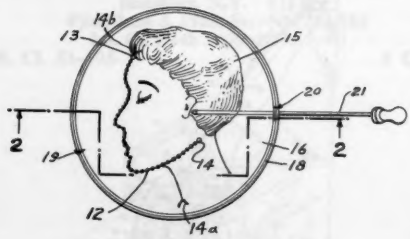
A flying toy resembling a flying saucer including an annular shaped body having a central duct extending through the body portion wherein the duct is of generally conical shape providing a conical cushion of air beneath

the toy in flight to increase its stability. There is also disclosed means for providing a torque in opposition to the torque produced by the propeller including airfoil means positioned within the duct.

3,568,359
TOY HAVING INTEGRALLY BIASED RECIPROCATING COMPONENTS
Norman C. Lee, Rocky Mount, N.C., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed Aug. 14, 1968, Ser. No. 752,625
Int. Cl. A63h *5/00*
U.S. Cl. 46—191 **8 Claims**

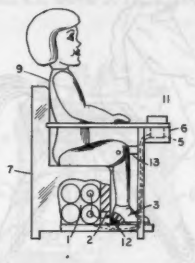
The sounder in a toy gun is actuated by an inertia motor driven through a gear train by a toothed portion of a reciprocating trigger. Elements of the gear train disengage when the trigger is not pulled back. A driven cam on one of the gears of the train engages a reciprocating clapper hammer pivotally mounted within the housing of the toy gun. Both the trigger and the reciprocating hammer are biased to idle positions by integrally formed cantilever leaf springs unitarily molded with the respective elements.

3,568,360
TOY WITH A FLEXIBLE MEMBER AND A BASE MEMBER ONE OF WHICH IS MAGNETIZED
Alfred H. Wallach, Bronxville, N.Y. (% Walco Toy Co. Inc., 38 W. 37th St., New York, N.Y. 10018)
Filed Dec. 30, 1968, Ser. No. 787,666
Int. Cl. A63h *33/26*
U.S. Cl. 46—236 **9 Claims**



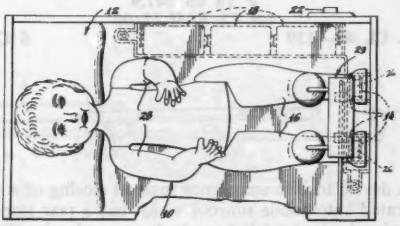
A toy is disclosed which uses a flexible member usually a chain, which may be anchored at its ends with a substantial length between the points of attachment whereby the flexible member can be manipulated to complete a figure or a portion of a figure by shifting portions of this member to any positions desired. A base means is provided which includes a base member. One of these members is magnetized and the other member is of magnetic material so that the flexible member is releasably retained in place when manipulating the flexible member and against inadvertent dislocation of the same. Preferably the device is enclosed in a box with a transparent cover and a manipulator is projected through a hole in a wall for manipulating the flexible member.

3,568,361
CONTROLLED DUAL-ACTION DOLL
Philip D. Bart, Monsey, N.Y., and Patrick M. Tomaro, Maplewood, N.J., assignors to Remco Industries, Inc., Harrison, N.J.
Filed May 7, 1969, Ser. No. 822,512
Int. Cl. A63h *33/26*
U.S. Cl. 46—239 **10 Claims**



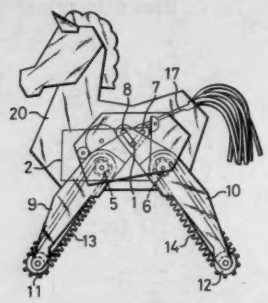
A doll sitting in a high chair responds to the placing of a plate on the tray of her high chair by either jumping up and down or shaking her head "No." The plate contains magnets which activate switches located in the tray to determine the direction and speed of rotation of a reversible motor. Linkages responsive to motor's direction will cause the doll to shake her head "No," or to jump for joy.

3,568,362
ANIMATED DOLL
Patrick M. Tomaro, Maplewood, N.J., assignor to Remco Industries, Inc., Harrison, N.J.
Filed Feb. 14, 1969, Ser. No. 805,939
Int. Cl. A63h *3/20*
U.S. Cl. 46—241 **9 Claims**



This invention discloses a doll capable of moving from a reclining position to a sitting position with simultaneous movement of the doll's arms. When in the sitting position the moving arms can contact flexible rattles and the like to more closely imitate the movements of a baby. A spring torque producer aids a power actuator which includes a motor and three-piece crank arm; the motor is operatively associated with the three-piece crank arm and arranged to pivot the upper portion of the doll with respect to its lower portion. On the heels of the doll there are metallic plates electrically connected to the motor. Magnetic contacts are located in a crib or other foundation. A power source located in the foundation is electrically connected to the magnetic contacts. When the metallic plates and magnetic contacts engage one another a switch is actuated causing energy to flow from the power source to the motor, thereby actuating the three-piece crank arm causing the doll to begin to move toward a sitting position.

3,568,363
MOVABLE ANIMAL TOY
Yoshiji Tanimura, Saitama-ken, Japan, assignor to Kabushiki Kaisha Bandai, Tokyo, Japan
Filed June 24, 1969, Ser. No. 836,034
Claims priority, application Japan, Sept. 12, 1968, 43/78,939
Int. Cl. A63h *11/00*
U.S. Cl. 46—247 **7 Claims**



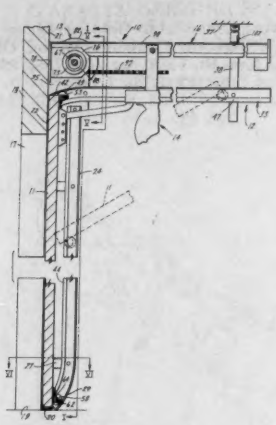
A movable animal toy provided with endless tracks each mounted on each of the front and rear legs of the animal toy which are pivotally connected thereto for continuous movement in pivotal reciprocation motion relative to one another as a crank shaft rotates. The animal toy can move as the front and rear legs are moved back and forth in pivotal reciprocation motion relative to one another by the rotating crank shaft while the endless tracks are also moved by the rotating crank shaft.

3,568,364
DEVICE FOR EMERGENCY CLOSING OF A POWER OPERATED AUTOMOBILE SUNROOF
Alfred Schmid, Munich-Furstenried, Germany, assignor to Webasto-Werk G.m.b.H., Stockdorf, Germany
Filed Oct. 8, 1969, Ser. No. 864,784
Claims priority, application Germany, Oct. 25, 1968, P 18 05 347.9
Int. Cl. E05f *15/00*
U.S. Cl. 49—139 **6 Claims**

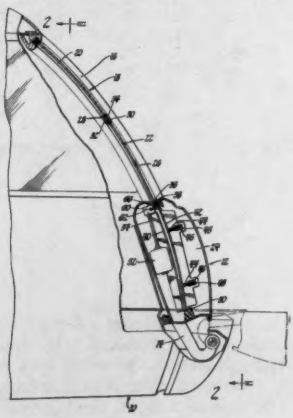
A device for the emergency manual closing of a power operated automobile sunroof which has a rear transverse carrying bridge and linkage to lower and raise the rear portion of the sunroof which is pulled open and pushed closed by an electric motor and a screw-threaded cable whose forward end is attached to the bridge. The closing device consists of a forward extension of the cable and a connecting tube extending forward from the bridge to a point where the two are connected in a quick-release coupling, and means for manually pulling the sunroof closed.

3,568,365
DOOR ASSEMBLY
Paul E. Pemberton, Donald S. Harris, and Gail L. Thornburg, Dallas, Tex., assignors to Overhead Door Corporation, Dallas, Tex.
Filed May 16, 1969, Ser. No. 825,220
Int. Cl. E05d *15/38*
U.S. Cl. 49—197 **6 Claims**

Apparatus adapted to support a one-piece, upwardly acting door for movement between a substantially horizontal, opened position and a substantially upright closed position closely adjacent wall means having an opening closed by said door when in the closed position. The apparatus includes a pair of spaced, horizontal and parallel tracks for guiding a pair of rollers mounted on the upper end of the door and a pair of spaced, parallel and upright tracks for guiding a pair of rollers mounted on the lower end of the door. The two pairs of tracks have curved end portions whereby the entire door moves downwardly at an angle into the closed position against the wall means.



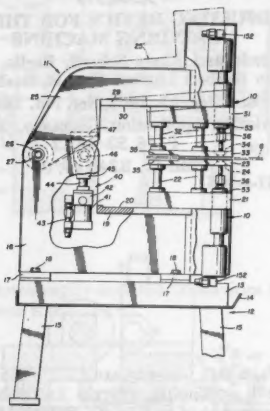
3,568,366
MULTIPLE PANE VEHICLE WINDOW
Richard F. Carella, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 7, 1969, Ser. No. 813,992
Int. Cl. E05f *15/08*
U.S. Cl. 49—349 **6 Claims**



A vehicle body has a plurality of window panes which are movable between a closed position in which the panes cover a body opening in edge to edge continuation and an open position wherein the panes are disconnected and stored juxtaposed to each other in a storage compartment communicating with the opening. A guide arrangement

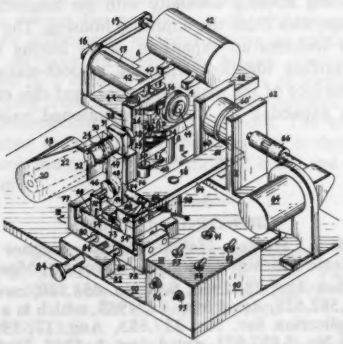
is provided for guiding the panes between the open and closed positions and a driving arrangement is provided for moving the window panes between open and closed positions.

3,568,367
GLASS DRILLING APPARATUS
Daniel O. Myers, Mansfield, Ohio, assignor to Akron Crane & Conveyor Company, Akron, Ohio
Filed June 10, 1968, Ser. No. 735,845
Int. Cl. B24b *7/00*
U.S. Cl. 51—81 6 Claims



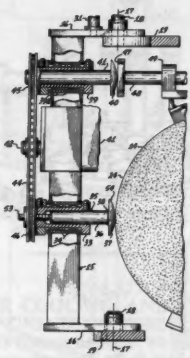
A compact glass drilling apparatus having a hydraulic motor rotating a bit at a selected speed and driving hydraulic mechanism to rapidly position the bit with respect to the glass to be drilled and to selectively control the rate of travel of the bit through the glass and having mechanism separately feeding a fluid lubricant to the bit.

3,568,368
CONTINUOUS DIAMOND GIRDLE POLISHING MACHINE
Efraim Gwircman, 387 S. 1st St., Brooklyn, N.Y. 11211
Filed June 3, 1968, Ser. No. 733,986
Int. Cl. B24b *3/00*; B28d *5/00*
U.S. Cl. 51—95 5 Claims



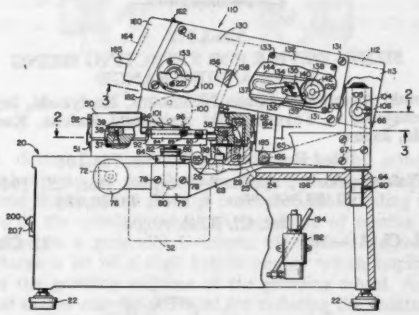
A continuous diamond girdle polishing machine comprises a diamond holder driven about the axis perpendicular to the plane of the diamond girdle, a polishing wheel driven about a horizontal axis, and an oscillating bar acting against one of the above, preferably the diamond holder, to effect a continuous reciprocation of the diamond across the polishing wheel during the polishing operation.

3,568,369
GEM GRINDING MACHINE
Edwin G. Marshall, 209 Crawford, Nogales, Ariz. 85621
Filed May 1, 1969, Ser. No. 820,931
Int. Cl. B24b *5/16, 17/02*
U.S. Cl. 51—97 4 Claims



A machine arranged to eliminate the hand work in grinding cabochons of semiprecious gems in which the size and shape are mechanically controlled.

3,568,370
LENS CRIBBER
Guy J. Wicksall, Fayette, N.N.Y., assignor to Textron Inc., Providence, R.I.
Filed Nov. 12, 1968, Ser. No. 774,769
Int. Cl. B24b *9/14*
U.S. Cl. 51—127 13 Claims



Lens cribbing is effected by engaging the lens blank around successively different portions of its periphery with a rotary annular grinding wheel that has a plane active surface perpendicular to its axis. The blocked lens blank and a template are releasably secured by chucks to opposite ends of the work spindle, which is rotatably journaled in a carrier that is pivotal into and out of an operative position. A flat on the lens block engages a cooperating flat on the lens chuck to assure that the template and blank will be properly aligned angularly about the spindle axis. The template engages a plane-faced shoe, whose upper face lies in the same plane as the active surface of the grinding wheel to effect intermittent indexing of the spindle. After one revolution, the carrier is

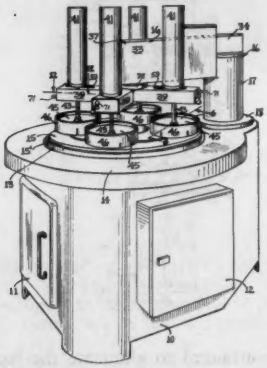
moved automatically to inoperative position. A cycle push-button is actuatable to swing the carrier to its operative position.

3,568,371

LAPPING AND POLISHING MACHINE

Lawrence Day and Joseph Dobrick, Chicago, and Arthur Kay, Evanston, Ill., assignors to Spitfire Tool & Machine Co., Inc., Chicago, Ill.

Filed Mar. 12, 1969, Ser. No. 806,513
Int. Cl. B24b *5/00, 29/00*
U.S. Cl. 51—161 10 Claims



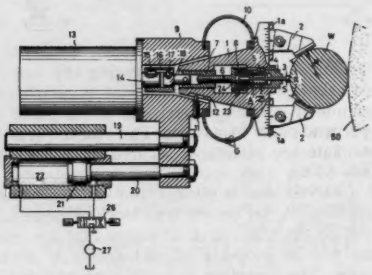
A machine for lapping and polishing work placed upon a work table disposed beneath a superstructure rotatable about a vertical axis at one side of the machine and carrying a plurality of lapping rings and pressure plates within the rings, the rings and pressure plates being elevated vertically with respect to the superstructure for movement as a unit therewith from position upon and over the work plate to provide an unobstructed area with respect to the work plate.

3,568,372

SIZING DEVICE FOR EFFECTING SIZING OVER A WIDE RANGE

Hiroaki Asano and Hideo Nishimura, Kariya-shi, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed Dec. 4, 1968, Ser. No. 781,105
Claims priority, application Japan, Dec. 15, 1967, 42/80,368; Nov. 4, 1968, 43/80,485
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 12 Claims



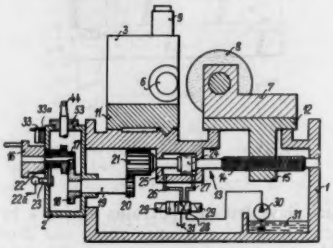
A sizing device for grinders or the like which uses a feeler or feelers mounted on a sizing head for contacting a workpiece, and a displacement detector for sensing the displacement of the feeler or feelers caused by a change in the outer circumferential dimension of the workpiece so as to control the feed of wheel slide. The displacement detector is moved in accordance with numerical data previously stored, so that the point of generation of a sizing signal by the displacement detector can be moved. The sizing device measures the diameter of a workpiece accurately and over a wide range by eliminating master setting.

3,568,373

ADJUSTING DEVICE FOR THREAD GRINDING MACHINE

Gerhard Stade and Klaus Scherff, Berlin, Germany, assignors to Herbert Lindner GmbH, Berlin, Germany

Filed Dec. 17, 1968, Ser. No. 784,304
Claims priority, application Germany, Jan. 17, 1968, P 16 52 103.2
Int. Cl. B24b *49/00*
U.S. Cl. 51—165 7 Claims



An adjusting device on a thread grinding machine controls grinding of a male thread of high fitting accuracy on workpieces such as spindles, bolts and the like which are to be paired with female workpieces such as threaded ball bearing nuts and the like. The adjusting device includes a measuring cone for receiving a measuring head for the nut to be measured, and this measuring head is in geared connection with the usual fine adjusting shaft of the grinding machine and is so arranged as to be displaced axially within the measuring head when the fine adjusting device is operated. The measuring head is secured on the adjusting housing coaxially with the measuring cone which protrudes from the adjusting housing. The measuring head includes an expansion sleeve having an inner conical surface identical with the smooth-walled outer conical surface of the measuring cone, and this expansion sleeve is expanded by the aforementioned axial movement.

3,568,374

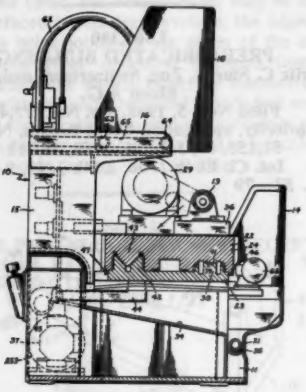
GRINDING MACHINE

Frederick A. Hohler, Holden, Mass., assignor to The Heald Machine Company, Worcester, Mass.

Application Apr. 28, 1965, Ser. No. 451,550, now Patent No. 3,382,623, dated May 14, 1968, which is a division of application Ser. No. 217,683, Aug. 17, 1962, now Patent No. 3,197,921, dated Aug. 3, 1965. Divided and this application Apr. 25, 1968, Ser. No. 724,057
Int. Cl. B24b *41/02*
U.S. Cl. 51—165.77 2 Claims

This invention has to do with the generation of surfaces of revolution by the abrasive process in which an

abrasive wheel is fed into the surface of revolution with a controlled force and various parts of the apparatus are

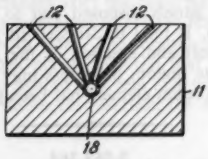


formed with downwardly-directed concavities into which air under pressure is introduced.

3,568,375
METAL PANEL HOLDER

Mary Jo Ann Carroll, Aberdeen, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Apr. 4, 1968, Ser. No. 718,795
Int. Cl. B25b *11/00*
U.S. Cl. 51—235 **7 Claims**



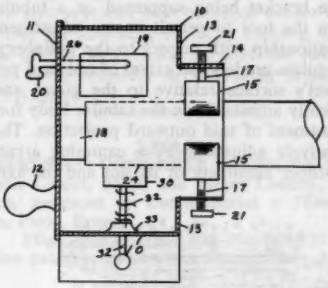
A device and system for securing metal test panels in order to subject the panels to a cleaning process, comprising an elastomeric material having an axial bore extending partially therethrough, means connecting the axial bore to a vacuum source, a series of traverse bores commencing from the surface of the elastomeric material and interconnecting with the axial bore. The test panels are secured by positioning them on the surface of the elastomeric material over the traverse bores and applying a vacuum.

3,568,376
POLISHER FOR PIPE ENDS

Donald G. Slater, 1449 W. 30th St., Erie, Pa. 16504

Filed May 2, 1968, Ser. No. 725,975
Int. Cl. B24b *19/00, 9/02*
U.S. Cl. 51—241 **5 Claims**

The tool disclosed herein is intended for use by plumbers and mechanics for cleaning the ends of pipes and tubing. The tool has a cylindrical body with a pipe guide means on one end. The pipe guide means can be a device having either radially adjustable jaws, circularly adjustable jaws or bushings or tongs. A roll of sand paper, emery paper or other abrasive strip may be supported on the tool to form an abrasive element. One end of the strip of abrasive is attached to the tool and

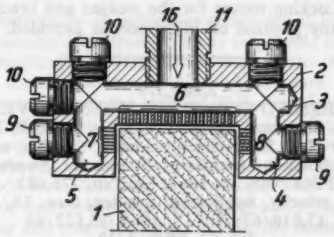


the distal end of the strip is held in tension in engagement with the pipe. Thus, by rotating the tool, the pipe can be cleaned.

3,568,377
DEVICE FOR COOLING AND CLEANING OF GRINDING WHEELS

Robert Blohm, 63 Kampchaussee, 80 Hamburg, Germany, and Wlodzimierz Sawluk, 82 Falkenried, 20 Hamburg, Germany

Filed Jan. 2, 1969, Ser. No. 788,366
Claims priority, application Germany, Jan. 9, 1968, P 16 52 003.9
Int. Cl. B24b *55/00*
U.S. Cl. 51—262 **8 Claims**



A device for the cooling and cleaning of grinding wheels during the grinding operation by means of a pressurized fluid applied through nozzles to the grinding surfaces of the grinding wheel. A multitude of nozzles are provided in a generally U-shaped block and adapted to discharge a jet of a high kinetic energy which impinges upon the grinding surfaces of the grinding wheel. Additional means may be provided for reducing the resistance caused by air turbulence betweet the nozzles and the grinding wheel.

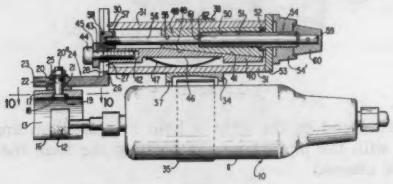
3,568,378
ADJUSTABLE PRECISION GUARD FOR POWERED HAND TOOLS, SUCH AS GRINDERS, BUFFERS OR THE LIKE

John O. Emmerson, Hamden, and Charles L. Morris, West Hartford, Conn., assignors to The DSD Company, Hamden, Conn.

Filed July 19, 1968, Ser. No. 746,096
Int. Cl. B24b *55/04*
U.S. Cl. 51—268 **10 Claims**

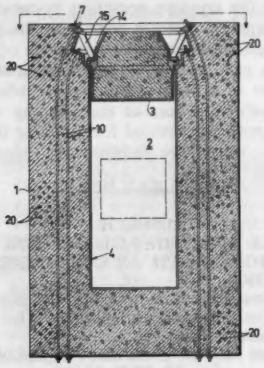
Adjustable precision guard for powered hand tools such as grinders, buffers and the like to smooth out rough surfaces or reduce raised areas while preventing contact

between the grinder or buffer wheel and surfaces adjacent the work area which is of particular importance where dimensional precision is required of the final product, including a longitudinally slotted guard surrounding the grinding or buffing wheel and adjustably attached to a bracket, the bracket being supported on a tubular body mounted on the tool to permit coarse adjustment of its vertical relationship with respect to the periphery of the wheel to regulate crudely the extent of outward projection of the wheel's surface relative to the guard and being micrometrically adjustable on the tubular body for micrometric adjustment of said outward projection. The guard is also rotatively adjustable by a camming arrangement to insure proper alignment of its slot and the axis of the



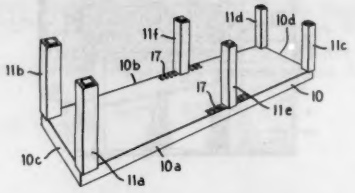
wheel. The micrometric adjustment means is located within the tubular body. It includes wedge members, one of which is movable guidedly in axial direction of the tool shaft in reciprocal directions relative to the other as required by means of a manipulating screw to raise or lower the bracket and thus the guard with fine adjustment control relative to the wheel. Micrometric adjustments of the position of the guard slot relative to the wheel is provided by the combination of the thread pitch of the manipulating screw and the pitch of the engaging surfaces of the wedges so that the positional relationship between the guard and wheel may be controlled up to 0.0001". Locking means for the wedges and bracket and guard in any position of adjustment is provided.

3,568,379
PRESTRESSED CONCRETE PRESSURE VESSEL
Erik Borje Johnsson, Stockholm, Taivo Tarandi, Lidingo, and Per Kurt Luthman, Stockholm, Sweden, assignors to Aktiebolaget Atomenergi, Stockholm, Sweden
Filed Nov. 14, 1968, Ser. No. 775,683
Claims priority, application Sweden, Dec. 11, 1967, 17,018/67; Nov. 7, 1968, 15,127/68
Int. Cl. E04h *7/20*
U.S. Cl. 52—21 **12 Claims**



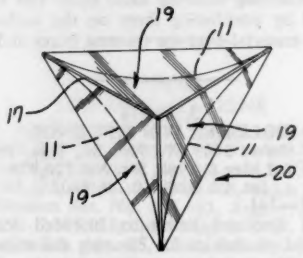
A prestressed concrete pressure vessel comprises a concrete vessel, axial prestressing cable and circumferential prestressing cables. The vessel has a lid and an inner steel lining. The upper portion of the steel lining is designed as a comparatively rigid steel structure having a shoulder for supporting the lid and shoulders for fastening the upper ends of the axial prestressing cables.

3,568,380
PREFABRICATED BUILDINGS
Fritz C. Stucky, Zug, Switzerland, assignor to Elcon A.G.
Filed Nov. 5, 1968, Ser. No. 773,460
Claims priority, application Great Britain, Nov. 10, 1967, 51,155/67; July 26, 1968, 35,710/68
Int. Cl. E04b *1/06;* **E04h** *1/12, 9/06*
U.S. Cl. 52—79 **17 Claims**



A prefabricated building unit, for forming the structural framework or back-bone of a transportable prefabricated building unit, consists of a prefabricated rectangular floor panel structure having a prefabricated vertical load-bearing column rigidly attached to it at each corner and at an intermediate region in the length of each side. In a modification a column may be omitted at one corner, and/or from one side, and replaced by a temporary column. Room elements may therefore be constructed of a length hitherto impracticable because in situ, the room elements in each upper storey are supported at the intermediate region by the intermediate columns of the lower room elements, thereby reducing the unsupported floor span. The floor panel structure may be a single panel or two co-planar panels disposed end to end at the intermediate region. It may be stressed to prevent it sagging (during transport and erection of the room element) at the intermediate region; the stress may be relieved or reduced after the room element has been placed in situ.

3,568,381
STRUCTURAL SYSTEM UTILIZING MEMBRANE STRUCTURAL PANELS HAVING DOUBLE RULED QUADRIC SURFACES
Jesse R. Hale, 14020 Budlong Ave., Gardena, Calif. 90247
Filed Nov. 27, 1968, Ser. No. 785,851
Int. Cl. E04b *1/32, 7/10*
U.S. Cl. 52—81 **12 Claims**



A basic structural element is formed from a warped membrane structural panel having double ruled quadric surfaces. The double ruled quadric surfaces of the panel

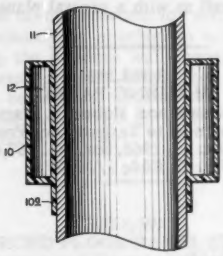
have biaxially oriented surface rulings, the edges of a preferred embodiment of the panel lying in planes parallel to one or the other of the sets of rulings. The membrane panel has four edges, pairs of which are equal in length. In some cases, the warped panel may be enclosed in a plane surfaced tetrahedral envelope, the edges of the plane surfaces being joined to the edges of the enclosed warped surfaces. Basic structural elements formed by the warped membrane panels, either by themselves or in combination with the plane surfaced tetrahedral envelope, may be added together to form various composite modules which can be further integrated to create structures useful as panels, posts, beams, and the like.

3,568,382

FRANGIBLE PIPE FLOOR FLANGE RECEPTACLE

Robert J. Munn, P.O. Box 216, Zachary, La. 70791

Filed May 11, 1967, Ser. No. 637,778
Int. Cl. E04b *1/41*
U.S. Cl. 52—99 **4 Claims**



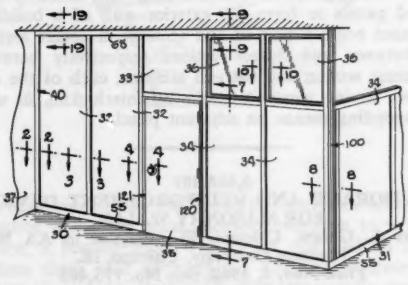
An article of manufacture comprising a pipe floor flange receptacle for forming a cavity around pipes that are to be used as plumbing in a building or structure having a concrete slab floor. The receptacle serves a dual role, i.e., provides a preformed cavity around the pipe enabling insertion of floor flanges after the concrete is poured and cured and provides a receptacle, for the floor flange, having uniformly smooth sides. The receptacle is preferably made of a frangible, plastic material that will withstand the pressure of the poured concrete and yet can be easily broken to provide access for insertion for the floor flange.

3,568,383

MODULAR DEMOUNTABLE WALL SYSTEM

Thomas E. Judkins and Michael J. Kedel, Baltimore, Md., assignors to Eastern Products Corporation, Baltimore, Md.

Filed Oct. 15, 1968, Ser. No. 767,727
Int. Cl. E06b *1/12*
U.S. Cl. 52—210 **29 Claims**



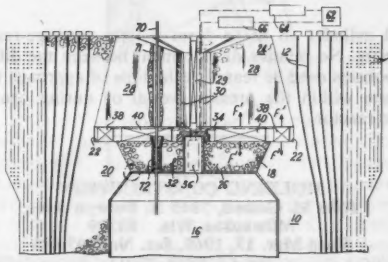
A modular, demountable wall system is disclosed including one-piece sheet metal studs and snap-on battens for locating and retaining pre-cut wall panels. Floor and ceiling channels are also provided for spacing and locating the bottom and top edges of the wall panels and, similarly, starting, finishing and glazing channels are provided for the vertical edges of the end panels and for around the window openings. Reversible metal door framing elements are also provided with universal corner connectors and anchors for attaching the door framing elements to the studs of the wall system so that the door may be hinged to swing inwardly or outwardly from either its right or left side.

3,568,384

PRESTRESSED CONCRETE PRESSURE VESSEL

Jean-Louis Cruset, Paris, and Pierre Launay, Versailles, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed June 27, 1968, Ser. No. 740,637
Claims priority, application France, July 3, 1967, 112,909
Int. Cl. E04c *3/26*
U.S. Cl. 52—224 **9 Claims**



A substantially cylindrical pressure vessel has at least one removable end structure so as to provide an opening which practically corresponds in diameter to the interior of the vessel. The removable end structure comprises from the interior to the exterior of the vessel in the axial direction an outwardly-flared bearing face formed on a cornice of the internal vessel wall, a removable slab tightly applied against the bearing face, a flared abutment face formed in the internal vessel wall and an assembly of wedge-shaped elements each occupying an angular sector and forcibly applied against the abutment face. The removable slab is applied against the bearing face with variable pressure by means of first jacks mounted between the slab and the wedge assembly. The wedge assembly is applied against the abutment face either by means of second jacks mounted between the cornice and the assembly or by means of tensioned cables passed through the cylinder wall at right angles to the abutment face.

3,568,385

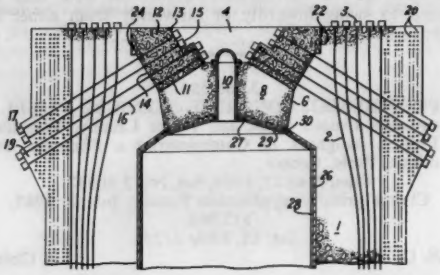
PRESTRESSED CONCRETE PRESSURE VESSEL FOR NUCLEAR REACTORS

Jean-Louis Cruset, Paris, Pierre Launay, Versailles, and Jacques Lemasson, Marly le Roy, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed July 1, 1968, Ser. No. 741,422
Claims priority, application France, July 3, 1967, 112,908
Int. Cl. E04c *3/10*
U.S. Cl. 52—224 **10 Claims**

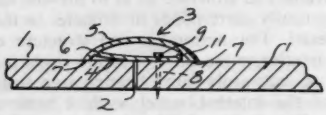
At least one of the ends of the pressure vessel is pierced by an opening delimited by two successive frustoconical faces which are flared towards the exterior. In order to close the opening, a slab of corresponding shape is applied against the first face or internal face and a series of wedge-shaped elements are clamped both against said

first face and against the second face of the opening by means of rectilineal cables which are passed right through the wedge elements and the pressure vessel wall. Peripheral prestressing cables serve to complete the forcible application of the slab and wedge elements against the



vessel cylinder so as to form a tight pressure-resistant assembly. No relative displacement between the different components need be feared at the time of approach to full pressure within the pressure vessel or during operation of the reactor.

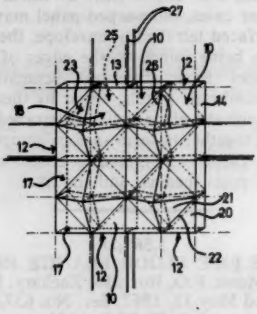
3,568,386
MOLDING CONSTRUCTION
John M. Gossen, 7645 N. Berwyn Ave., Milwaukee, Wis. 53209
Filed Mar. 17, 1969, Ser. No. 807,683
Int. Cl. E04f *19/02*
U.S. Cl. 52—288 **10 Claims**



A flexible plastic molding for covering the joints in building panels. The molding includes a base which covers the joint between the panels and a curved or convex outer section is connected along its side edge to the base. A fastener, such as nail, is driven through the curved outer section and connects the base to the panel. As the nail passes through the outer section, the outer section is deformed inwardly toward the base, and a projection or ridge on the base engages the deformed outer section and urges it outwardly to its original position after the nail has been driven through.

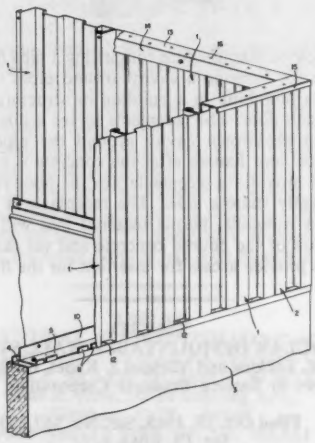
3,568,387
STRUCTURAL ELEMENT
Günter Grabow, 42 Rosenstrasse, 7024 Bernhausen, Germany
Continuation of application Ser. No. 644,557, June 8, 1967. This application May 7, 1969, Ser. No. 824,739
Claims priority, application Germany, June 13, 1966, G 47,147; Oct. 11, 1966, G 35,588
Int. Cl. E04b *2/14*; E04c *1/42*
U.S. Cl. 52—306 **2 Claims**

A structural element which is particularly suitable for use in the erection of wall structures. The element comprises at least one block of vitreous material. This block has a first and a second major surface and at least one of these major surfaces is at least in part inclined to a central plane of the block whereby the thus-inclined portion



has a predetermined relationship with the central plane of the block as well as with a general plane of the structural element.

3,568,388
BUILDING PANEL
Charles T. Flachbarth and Robert L. Parsons, Parkersburg, W. Va., assignors to Textron Inc., Providence, R.I.
Filed Oct. 15, 1968, Ser. No. 767,613
Int. Cl. E04c *1/10, 2/32*
U.S. Cl. 52—588 **3 Claims**

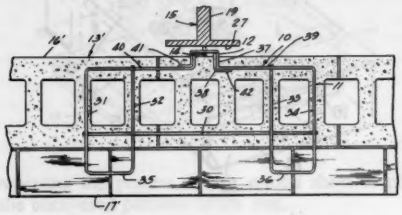


A building panel to be interlocked with similarly configured panels to form the exterior wall of a building, the panel being a pair of end sections, a center section therebetween and fluted sections respectively between the center section and the end sections, each of the end sections having means to make an interlocking fit with corresponding means on adjacent panel.

3,568,389
ANCHORAGE AND REINFORCEMENT DEVICE FOR MASONRY WALLS
Robert A. Gulow, Chicago, Ill., assignor to AA Wire Products Company, Chicago, Ill.
Filed Nov. 5, 1968, Ser. No. 773,463
Int. Cl. E04b *5/18*; E04c *1/41*
U.S. Cl. 52—714 **8 Claims**

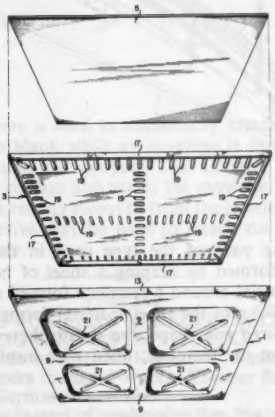
A reinforcement and anchorage device having a longitudinally extending member and at least a pair of longi-

tudinally spaced transverse members attached to the longitudinally extending member to provide a reinforcing structure for insertion into the mortar joint between courses of block members of a masonry wall. The reinforcing members include a pair of overlapping U-shaped portions which are connected to the transverse members



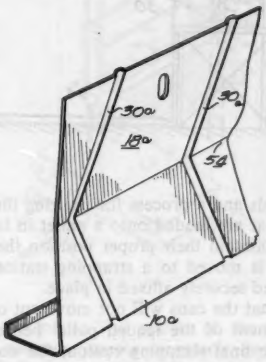
along one side of the structure for surrounding and engaging an anchored tie attached to a supporting structure for tying the masonry wall thereto. The U-shaped portions are each provided with a free end to allow the anchor tie to be inserted therebetween for enabling the assembly of the device onto an anchor already attached to the supporting structure.

3,568,390
REINFORCED FLOOR PANEL STRUCTURE
Eugene L. Swensen and Raymond Gerald Sartori, Rockville, Md., assignors to Liskey Aluminum, Inc., Elkridge Landing Road, near Baltimore Friendship Airport, Md.
Filed Feb. 24, 1969, Ser. No. 801,442
Int. Cl. E04g *15/18*
U.S. Cl. 52—619 **8 Claims**



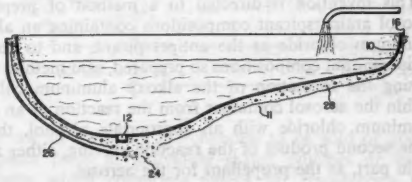
A floor panel to be used in an elevated floor assembly, including a flat top sheet member receptive to a tread surface, a bottom sheet with raised ribs and an intermediate sheet with corrugations. The intermediate and bottom sheet have opposing flanges that overlie one another to form panel sides. The ribs of the bottom sheet form channeled beams along the edges of the panel. The corrugations of the intermediate sheet are located within the channeled beams, the top sheet member and under sheets are secured to one another so that the panel resists deformation and deflections under load.

3,568,391
CASING BEAD FOR USE IN A JOINT CONSTRUCTION
Donald J. Conway, Glenview, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Oct. 30, 1968, Ser. No. 771,821
Int. Cl. E04b *1/70*; E04f *13/06*
U.S. Cl. 52—739 **2 Claims**



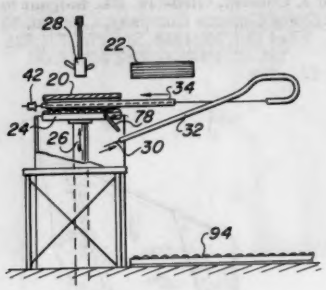
A stucco-covered, curtain wall construction employs a joint including an elongate L-shaped casing bead and an elongate generally wing-shaped drainage cap member. The two joint components form a horizontally-disposed, structurally yielding joint between outer covering panel sections. The two joint components provide ventilation and water drainage between the windward and leeward sides of the wall.

3,568,392
METHOD OF INSTALLING A ONE PIECE SWIMMING POOL
Robert G. Stark, Seattle, Wash., assignor to San Juan Products, Inc., Seattle, Wash.
Filed Apr. 10, 1969, Ser. No. 822,835
Int. Cl. E02d *27/32, 27/52*
U.S. Cl. 52—742 **5 Claims**



A one piece swimming pool liner of glass fiber reinforced plastic or other suitable material, is installed and leveled in place in an excavation lined with sand or a cementitious mixture, the excavation corresponding essentially to the contour of the pool liner, by partially filling the pool with water and introducing water into the sand layer at a pressure sufficient to permeate the sand layer and raise or float the pool and settle the sand underneath the pool.

3,568,393
CAN PACKAGING METHOD AND APPARATUS
John W. King and John D. Sweeney, Green Bay, Wis., assignors to National Can Corporation, Chicago, Ill.
Filed Feb. 24, 1969, Ser. No. 801,525
Int. Cl. B65b *13/04, 35/50;* B65d *63/16*
U.S. Cl. 53—3 8 Claims



An apparatus and a process for insuring that the open-ended cans that are loaded onto a pallet in layers within a palletizer maintain their proper position thereon as the loaded pallet is moved to a strapping station where the cans are moved securely affixed in place.

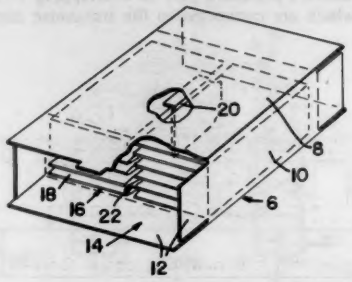
To insure that the cans will not move out of alignment during movement of the loaded pallet between the palletizer and the final strapping station, the stacks of cans are strapped to the pallet within the palletizer. Before the pallet is loaded in the palletizer, a strap is directed under the pallet into a clamping apparatus which will hold the strap in position relative to the pallet as the pallet is being loaded with layers of cans. After the strap is so positioned, the strap feeder or chute used to direct the strap under the pallet into a holding mechanism is withdrawn to permit the loaded pallet to be retracted and accept additional layers of cans, during which time, strap is payed out from a supply source. The strap is then disposed completely around the loaded pallet, after which it is tensioned and secured in position.

3,568,394
METHOD FOR PREPARING AEROSOL ANTIPERSPIRANT COMPOSITIONS
Elly T. Margolis, Los Angeles, Calif., assignor to Dart Industries Inc., Los Angeles, Calif.
No Drawing. Filed Aug. 24, 1967, Ser. No. 662,886
Int. Cl. A61j *3/00;* A61k *7/00;* B65d *47/20*
U.S. Cl. 53—21 1 Claim

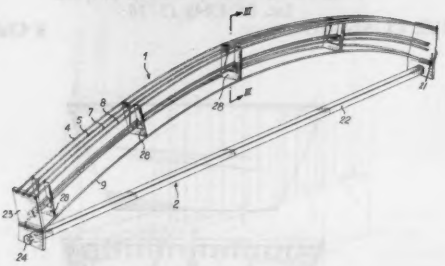
This invention is directed to a method of preparing aerosol antiperspirant compositions containing an alkoxy aluminum chloride as the antiperspirant, and to aerosol antiperspirant compositions so prepared, said method comprising the formation of the alkoxy aluminum chloride within the aerosol container from the reaction of an alkyl aluminum chloride with an appropriate alcohol, the alkane second product of the reaction serving, either alone or in part, as the propellant for the aerosol.

3,568,395
APPARATUS FOR PLACING PARTITIONS BETWEEN STACKED RECEPTACLES IN A CONTAINER
Marvin O. Docili, Box 217, Loleta, Calif. 95551
Filed Mar. 7, 1969, Ser. No. 805,303
Int. Cl. B65b *5/06*
U.S. Cl. 53—26 11 Claims

A method and apparatus for placing loose partitions between flat sides of a container such as a cardboard box in which the partition is disposed intermediate stacks of receptacles holding the articles being packed. The partitions are inserted into the box simultaneously with the receptacle stacks so that the stacks maintain the partition in an upright position during and after their insertion.



3,568,396
INSULATING PADS AND THEIR MANUFACTURE
André Jehier, 8 Rue Racine, 49 Angers, France
Filed Dec. 16, 1968, Ser. No. 784,139
Claims priority, application France, Dec. 28, 1967, 134,127
Int. Cl. B65b *43/08*
U.S. Cl. 53—29 7 Claims

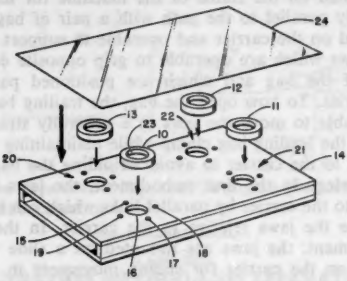


Insulating pads of the type used in the covering of joints are formed by draping a sheet of heat shrinkable plastic material around a template formed of a bundle of rods. Shrinking of the sheet material forms a sheath having the desired pad shape; the sheath thereafter being removed from the template, filled with insulating material and sealed.

3,568,397
METHOD FOR ENCAPSULATING RING-SHAPED OBJECTS
Virgil C. Hammond, Kansas City, Mo., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed June 27, 1969, Ser. No. 837,071
Int. Cl. B65b *31/00*
U.S. Cl. 53—22 1 Claim

Disclosed is a method for encapsulating a ring-shaped object, such as a transformer core or coil, comprising the steps of establishing a vacuum about the ring, heating a

first sheet of plastic, allowing the plastic to be drawn about a portion of the ring, trimming the excess plastic,



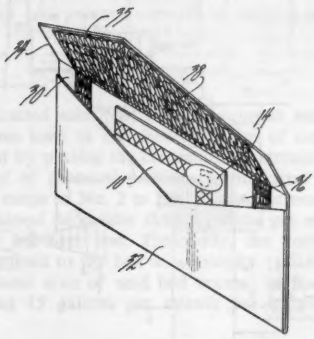
and repeating the process with a second sheet of plastic over the uncovered portions of the ring.

3,568,398

PROCESS USING MATERIAL HAVING ADHESIVE RELEASING PROPERTY FOR MAKING A COUPON CONTAINING ENVELOPE OR THE LIKE

Robert D. Allison, West Hartford, Conn., and Robert E. Lafler, Charlton City, and Joseph M. Murphy, Wilbraham, Mass., assignors to United States Envelope Company, Springfield, Mass.

Filed Mar. 31, 1967, Ser. No. 627,385
Int. Cl. B65d *27/00*
U.S. Cl. 53—31 **4 Claims**



Moist adhesive is used to temporarily attach a coupon to an envelope blank while an envelope is formed therefrom and around the coupon. The adhesive when dry adheres to the coupon and not to the envelope so that the coupon may be readily removed from the envelope. Thereafter, the adhesive may be used to attach the coupon to a suitable surface.

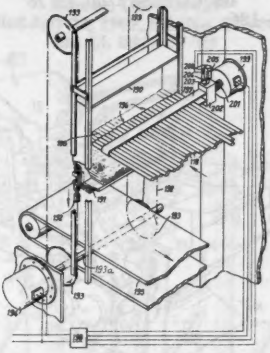
3,568,399

APPARATUS FOR FILLING RECEPTACLES WITH CIGARETTES OR THE LIKE

Ulrich Bornfleth and Horst Kochalski, Hamburg, Germany, assignors to Hauni-Werke, Koerber & Co. K.G., Hamburg, Germany

Continuation-in-part of application Ser. No. 653,234, July 13, 1967. This application Oct. 13, 1967, Ser. No. 675,175
Claims priority, application Great Britain, July 18, 1966, 32,267/66; Oct. 12, 1966, 45,669/66; Germany, Oct. 13, 1966, H 60,738
Int. Cl. B65b *19/10*
U.S. Cl. 53—148 **21 Claims**

The magazine of a cigarette packing machine, a cigarette tray or another receptacle for storage of cigarettes receives rows of cigarettes directly from the outlets of pneumatic tubes whose inlets receive cigarettes directly from rod cigarette machines, filter cigarette machines or other makers or through the intermediary of a distributor unit which can operate mechanically, pneumatically or electropneumatically. The distributor may include a rotary drum whose flutes receive cigarettes from a maker and are movable into registry with the inlets of the tubes, a distributor pipe which is in communication with the inlets of pneumatic tubes and accommodates switching devices operating on the basis of Coanda effect to distribute cigarettes from th pipe into the inlets, or a suction head which receives cigarettes from a belt and accumulates them into rows which are thereupon trans-



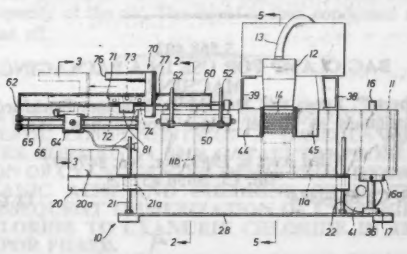
ferred into the inlets. The outlets of the tubes can be moved with reference to the receptacle or vice versa. If the receptacle is the magazine of a packing machine, the outlets are movable up and down in dependency on the level of the topmost layer of cigarettes in the magazine. If the receptacle is a tray, the latter is movable downwardly in stepwise fashion to provide room for entry of fresh rows of cigarettes. The outlets and/or the tray can be shifted sideways to the stagger each row of cigarettes with reference to the adjoining row or rows.

3,568,400

BAGGING MACHINE

Robert W. Pitts, 7710 Barberton, Houston, Tex. 77036

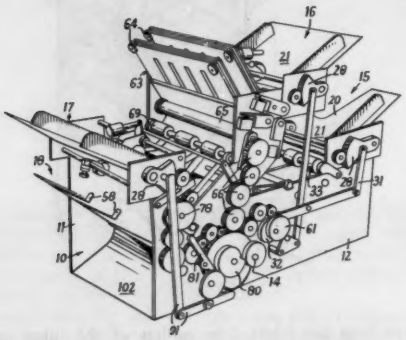
Filed Jan. 21, 1969, Ser. No. 792,432
Int. Cl. B65b *9/08, 43/30, 43/36*
U.S. Cl. 53—183 **14 Claims**



For use in wrapping merchandise to be sold or goods and piece parts in individual sealed pouches or bags, apparatus which comprises means for transferring the goods to be packaged or bagged through a directed chute with a stream of air blowing against a pouch formed in an elongate, laterally seamed, double-fold of sealing film of any suitable material, said apparatus simultaneously opening the pouch on drawing one side against a plurality of holes on an adjacent surface through which a vacuum flow is drawn, and causing the other side to pucker when the first side is pulled against a pair of bars which contort the bag into the puckered or opened posture for receiving the goods, said apparatus repetitively drawing the strip of bags through the apparatus to form the various seals and

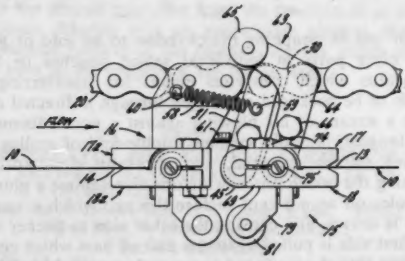
to completely seam the open bag at the upper edge and to thereafter serrate or tear the filled bags from the strip as desired.

3,568,401
MACHINES FOR INSERTING PAPER SHEETS INTO ENVELOPES
Francois Rodolphe Bonsch, London, England, assignor to Business Aid Inventions Limited, London, England
Filed July 8, 1968, Ser. No. 743,187
Claims priority, application Great Britain, July 7, 1967, 31,510/67
Int. Cl. B65b *5/00, 43/26*
U.S. Cl. 53—186 **29 Claims**



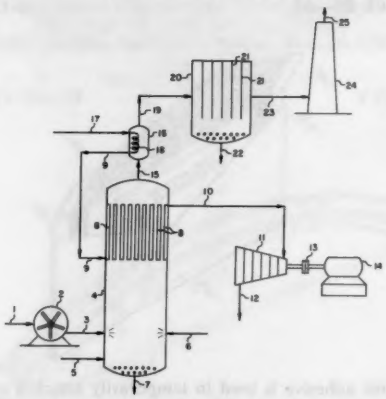
Machine for inserting paper sheets and like enclosures into envelopes in which envelopes are fed singly by a first conveyor system from a bulk supply station to an inserting station past means which open and moisten the gum on the envelope flap, in which one or two separate inserts are likewise fed singly by further conveyor systems from respective bulk supply stations to said inserting station at which they are given a bowed shaping, transverse to the insertion direction by conveyor roller means which not only rotate to propel the inserts but also swing bodily towards the envelope mouth which is opened by mechanical fingers and a jet of compressed air, the inserting station including a tilting table which operates to direct each filled envelope through a pair of flap closing and sealing rollers to a delivery station.

3,568,402
BAG CLAMP FOR USE IN A PACKAGING MACHINE
Robert F. Lense and Donald T. Peterson, Rockford, Ill., assignors to Riegel Paper Corporation, New York, N.Y.
Filed Aug. 6, 1969, Ser. No. 847,997
Int. Cl. B65b *43/32*
U.S. Cl. 53—384 **12 Claims**



A packaging machine for opening thin, flexible walled bags as the bags are advanced edgewise along a predetermined path into a filling station in upright positions with the walls of each bag positioned face-to-face. A carrier is mounted on the frame of the machine for movement generally parallel to the path with a pair of bag clamps mounted on the carrier and operable to support one bag with jaws which are operable to grip opposite edge portions of the bag and which are positioned parallel to the carrier. To bow open the bag, the trailing bag clamp is operable to move the jaws in a generally straight line toward the leading bag clamp while maintaining he jaws parallel to the carrier to avoid wrinkling the bag during the bowing. In the first embodiment, the jaws are connected to the carrier by parallel links which can be swung to move the jaws relative to the carrier. In the second embodiment, the jaws are mounted on a slide which is guided on the carrier for sliding movement in a generally straight, horizontal line relative to the carrier.

3,568,403
REMOVAL OF SOLIDS FROM FLUE GAS
Harry L. Richardson, Pittsburgh, Pa., assignor to Chemical Construction Corporation, New York, N.Y.
Filed June 21, 1966, Ser. No. 559,140
The portion of the term of the patent subsequent to Mar. 19, 1987, has been disclaimed
Int. Cl. B03c *3/01*
U.S. Cl. 55—5 **10 Claims**

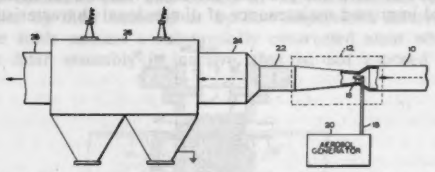


Improved electrostatic precipitation of entrained solids from flue gas, which is generated by burning sulfur-containing solid carbonaceous fuel, is attained by burning a vanadium-containing liquid hydrocarbon such as high vanadium content crude oil or refinery residual oil together with the solid fuel. The vanadium which is thus added to the combustion process is converted to vanadium pentoxide which causes at least partial catalytic oxidation of sulfur dioxide to sulfur trioxide, which provides improved results and greater efficiency during subsequent treatment of the flue gas by electrostatic precipitation, in terms of greater solids removal from the flue gas.

3,568,404
LOW PRESSURE ELECTROSTATIC PRECIPITATOR
Alan B. Walker, West Allenhurst, N.J., assignor to Research-Cottrell, Inc., Somerset County, N.J.
Filed May 6, 1968, Ser. No. 726,833
Int. Cl. B03c *3/01*
U.S. Cl. 55—5 **3 Claims**

A method of operating an electrostatic precipitator to clean low density gas streams. The sparking potential of

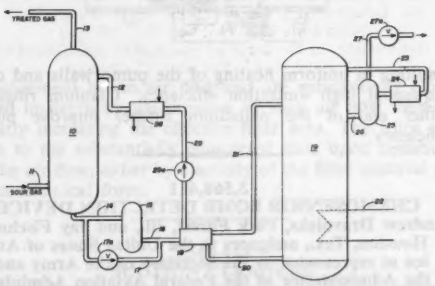
the gas stream to be cleaned is determined, a corona quenching aerosol is added to increase the sparking potential of the stream as it is passed through a precipitator for electrostatic cleaning.



3,568,405
FILTRATION METHOD AND APPARATUS

Charles R. Perry, Odessa, Tex., assignor to Portable Treaters Incorporated, Odessa, Tex.

Filed May 7, 1969, Ser. No. 822,359
Int. Cl. B01d *15/06*
U.S. Cl. 55—32 12 Claims

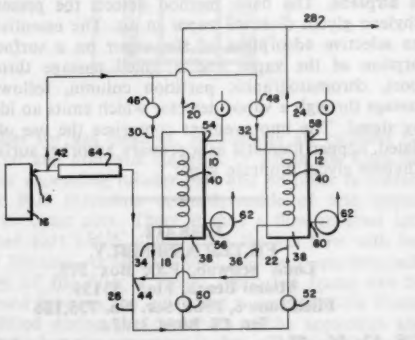


Contaminated solutions, such as aqueous amine treating solutions used in the desulfurization of natural gas, are purified by passing the contaminated streams through a filter bed of charcoal particles having sizes generally within the range of No. 2 to No. 12 mesh screen (Tyler), and at a rate of no greater than 4 gallons per minute per cubic foot of filter bed. Preferably, the contaminated stream is passed to the bed at a velocity (relative to the cross sectional area of said bed normal to flow) of no greater than 15 gallons per minute per square foot of filter bed.

3,568,406
DESICCANT AIR DRYER

Wesley M. Dynes, Hickling Heights, Corning, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,112
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 11 Claims

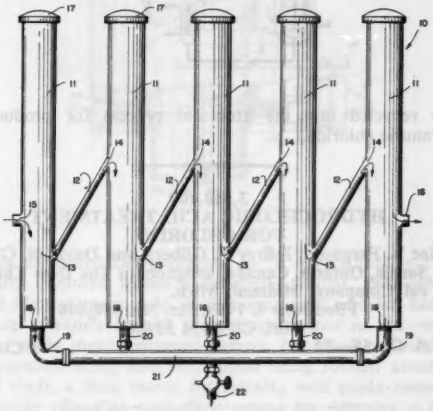


Method, and apparatus for the practice thereof, of dehydrating hot, pressured gas, in which a minor portion of the pressured gas to be dehydrated is conducted through one of a pair of dehydrating desiccant chambers, to reactivate the latter, while the major portion of the gas is conducted through the other chamber of the pair, to dehydrate said major portion.

3,568,407
METHOD AND APPARATUS FOR SEPARATING LIQUID FROM GAS

Murray D. Bradley, Jr., Apt. D, 1668 La Vista Road, Atlanta, Ga. 30329

Filed July 23, 1969, Ser. No. 844,144
Int. Cl. B01d *51/06*
U.S. Cl. 55—57 10 Claims



A method and apparatus for separating liquid such as moisture from a gas such as air. The air is passed through an enclosed passageway and is directed through a portion of reduced cross-section to reduce the pressure of the air by increasing its velocity in accordance with the Bernoulli principle, thereby reducing the moisture carrying capacity of the air. The liquid is then condensed and drained off.

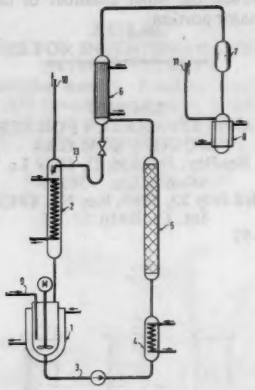
3,568,408
CONTINUOUS PROCESS FOR THE RECOVERY OF USEFUL COMPONENTS OF A GASEOUS MIXTURE FORMED IN THE CATALYTIC PRODUCTION OF CYANOGEN CHLORIDE FROM HYDROCYANIC ACID AND CHLORINE OR IN THE SUBSEQUENT TRIMERIZATION OF CYANOGEN CHLORIDE TO CYANURIC CHLORIDE IN THE VAPOR PHASE

Jean Riethmann, Allschwil, Basel-Land, and Leo Scheck, Benken, Basel-land, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed July 8, 1969, Ser. No. 839,933
Claims priority, application Switzerland, July 10, 1968, 10,296/68
Int. Cl. B01d *53/00*
U.S. Cl. 55—71 5 Claims

A continuous process for the recovery of components of a gaseous mixture formed in the catalytic production of cyanogen chloride or in the subsequent trimerization of the cyanogen chloride to cyanuric chloride in the vapor phase is described which comprises removing from the gaseous mixture consisting substantially exclusively of chlorine, hydrogen chloride and cyanogen chloride the

hydrogen chloride by absorption in pentachlorethane; the residual mixture of chlorine and cyanogen chloride can

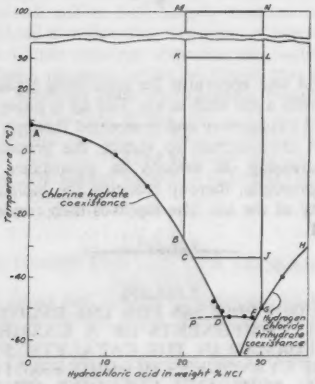


be recycled into the aforesaid process for producing cyanuric chloride.

3,568,409
HYDROCHLORIC ACID TREATMENT FOR CHLORINE

Mac B. Ferguson, Jeffrey F. Gilbert, and David N. Glew, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed June 4, 1969, Ser. No. 830,448
Int. Cl. B01d *53/00*
U.S. Cl. 55—71 **7 Claims**



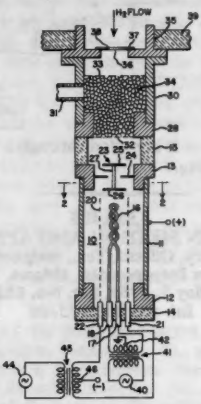
Disclosed herein is a process for removing salt sprays, water and nitrogen trichloride from elemental chlorine, by contacting the chlorine with hydrochloric acid. The acid concentration by weight is from 20 to 30 percent.

3,568,410
HYDROGEN PUMPING APPARATUS

Patrick P. Coppola, Fayetteville, N.Y., assignor to General Electric Company

Filed Feb. 13, 1969, Ser. No. 799,021
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 **16 Claims**

A gas pump of simplified, sturdy construction employs palladium maintained at an elevated temperature to permit efficient evacuation of gas from a region of low pressure to a region where partial pressure of the gas is several orders of magnitude higher. The cylindrical shape of the pump provides increased mechanical strength and improved maintenance of dimensional characteristics,

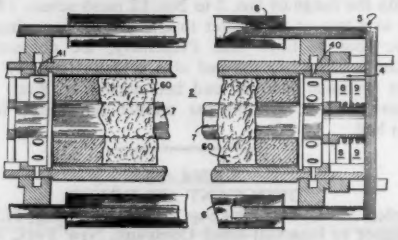


resulting in uniform heating of the pump walls and consequential high ionization efficiency. Titanium rings at either end of the palladium further improve pump efficiency.

3,568,411
CHEMOSENSOR BOMB DETECTION DEVICE

Andrew Dravnieks, Park Forest, Ill., and Jay Fischman, Houston, Tex., assignors to the United States of America as represented by the Secretary of the Army and/or the Administrator of the Federal Aviation Administration

Filed Mar. 18, 1969, Ser. No. 808,119
Int. Cl. B01d *53/04*
U.S. Cl. 55—208 **2 Claims**



This invention relates to an improved bomb detector for identifying the presence of dynamite, for example, in an airplane. The basic method detects the presence of ethylene glycol dinitrate vapor in air. The essential steps are selective adsorption of the vapor on a surface, desorption of the vapor and a timed passage through a short, chromatographic partition column, followed by passage through a vapor detector which emits an identifying signal. The improvement comprises the use of gold-plated, copper foametal as a primary adsorber surface for ethylene glycol dinitrate vapor.

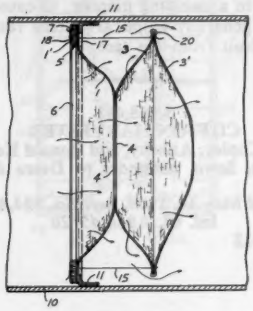
3,568,412
FILTER ASSEMBLY

Louis Schwab, P.O. Box 575, Miami Beach, Fla. 33139

Filed June 6, 1968, Ser. No. 735,126
Int. Cl. B01d *35/14*
U.S. Cl. 55—274 **6 Claims**

A filter assembly for liberating an air or other gaseous flow from discrete solid particles such as dust, the filter

material of which is in the form of a bellows including one or several joined folds, the bellows being open at the upstream end and closed at the downstream end either by filter material or by flow-impervious material. The folds assume a substantially contracted state when the filter assembly is inactive, that is, not exposed to



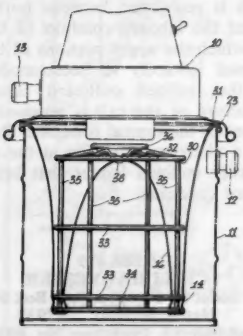
impingement by an air flow and are substantially elongated in depth by the pressure of such air flow thereby greatly increasing the effective filter area. The folds return to the substantially contracted state upon cessation of the air flow, either by elasticity of the filter material or by mechanical force.

3,568,413

SUCTION CLEANERS

Bohumil Jerabek, Scarborough, Ontario, Canada, assignor to Dustbane Enterprises Limited, Ottawa, Ontario, Canada

Filed July 23, 1969, Ser. No. 844,131
Int. Cl. B01d *46/04*
U.S. Cl. 55—288 **3 Claims**



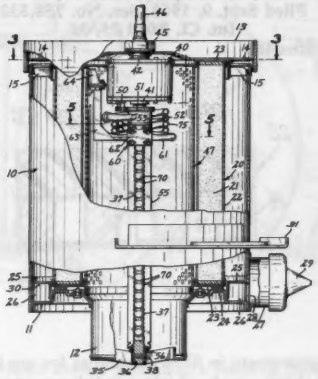
A filter for gas cleaners, particularly air cleaners for industrial and domestic cleaners, in which the filter has an outer depending tubular part and an inner re-entrant tubular part extending upwards inside of and spaced from the outer part. There is thus a flow reversal into the inner part which slows down the gas flow with improved filtering. As an additional feature to improve self-cleaning of the filter a freely supported frame can be positioned between the inner and outer parts, the frame being lifted during the operation of the apparatus and dropping when the apparatus is shut off. This agitates the filter and causes dust and other material to fall off the filter.

3,568,414

CLEANING APPARATUS FOR FLUID FILTERS

John R. Spriggs, Minneapolis, and Bernard A. Matthys, Rosemount, Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed June 5, 1969, Ser. No. 830,683
Int. Cl. B01d *46/04*
U.S. Cl. 55—294 **5 Claims**



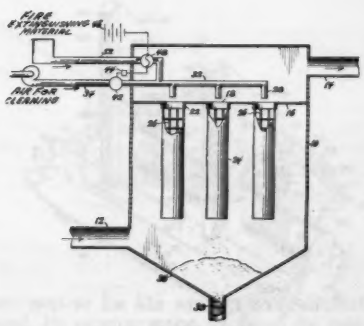
An elongated shaft adapted to be approximately coaxially mounted within a generally tubular, permeable fluid filter element, said shaft having right and left-hand helical channels formed therein and joined at the ends with guide means engaged therein for axial reciprocal movements along said shaft upon being rotated around said shaft, a fluid motor for rotating said guide means, a nozzle affixed to said guide means for directing a jet of fluid in a reverse direction through said fluid filter and flexible conduit means connecting said nozzle to a source of fluid whereby a jet of fluid is moved in a helical path around the inner surface of the filter element.

3,568,415

FIRE CONTROL FOR FILTERHOUSE

David J. Wyrough, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

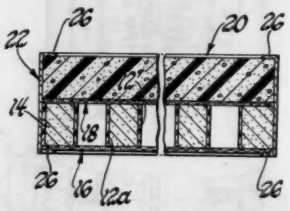
Filed Apr. 25, 1969, Ser. No. 819,289
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **4 Claims**



A fire control system for a bag filterhouse which automatically projects a fire extinguishing substance onto a

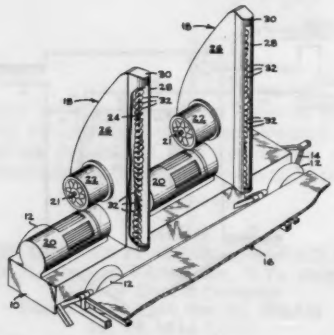
fire burning within the filterhouse. The fire control system is uniquely adapted to utilize an existing air jet system of bag cleaning thereby making available an effective fire control system at very minor additional expense of space and materials.

3,568,416
FILTER ASSEMBLY
Richard T. Staunton, Birmingham, Mich., assignor to G. S. Staunton & Company, Inc., Royal Oak, Mich.
Filed Sept. 9, 1968, Ser. No. 758,532
Int. Cl. B01d *25/06*
U.S. Cl. 55—486 **9 Claims**



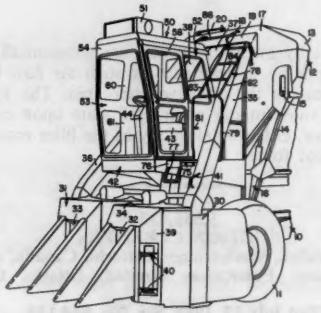
An improvement in filter assemblies for use in air treatment machines, such as air conditioners and the like. The assembly includes a honeycomb structure having a plurality of passages therein and aligned in the direction of air flow. Some of the passages in the honeycomb structure are filled with granular filter material, such as activated carbon, and others of the passages are unfilled. A member adapted to permit air flow therethrough is secured adjacent to the honeycomb structure at each surface thereof to retain the granular material in the passages. An additional layer of open cell filter material may be secured adjacent the downstream member for additional filtering as necessary. The entire assembly is enclosed in a border frame structure, and may be formed of throw-away materials or may be made of permanent materials.

3,568,417
HARVESTING METHOD
Glen E. Rauth, Winter Park, Fla., assignor to FMC Corporation, San Jose, Calif.
Filed Mar. 3, 1969, Ser. No. 803,770
Int. Cl. A01g *19/08*
U.S. Cl. 56—1 **4 Claims**



A fruit harvesting method is provided to direct continuously swerving air at fruit trees in converging currents from two air discharge openings. The air is discharged so that as it gets further away from its source and loses energy, it is superimposed on other swerving air to re-establish the failing energy of the individual air currents and increase the harvesting effectiveness of the apparatus. The swerving air effect is accomplished through the use of wobble air vanes mounted in the air discharged openings of the apparatus, and they serve to deflect the discharged air in a swerving manner, to cause wafting of the limbs in a generally elliptical pattern resulting in the abscission of fruit from the tree.

3,568,418
COTTON HARVESTER
Russell Dean Copley, Ankeny, and Ronald Keith Leonard, Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.
Filed May 14, 1969, Ser. No. 824,400
Int. Cl. A01d *45/20*
U.S. Cl. 56—12 **7 Claims**

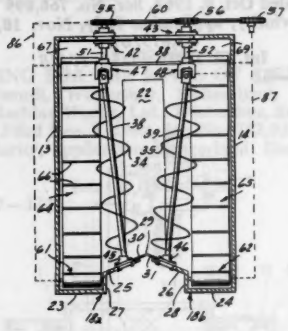


A cab and ladder structure for a cotton harvester in which the cab is positioned between outboard conduits and forward of the inboard conduits of the cotton harvester and in which the upper portions of the sides of the cab are inclined inwardly to accommodate the upper portions of the inclined outboard conduits and the rear wall structure of the cab is recessed to accommodate the descent of the central conduits. The ladder structure includes a platform extension at the exit of the cab and an upwardly inclined ladder that bridges over one of the outboard conduits.

3,568,419
CHILI HARVESTER
Wondel G. Creager, P.O. Box 518, Hatch, N. Mex. 87937
Filed Feb. 25, 1969, Ser. No. 802,100
Int. Cl. A01d *45/22*
U.S. Cl. 56—19 **9 Claims**

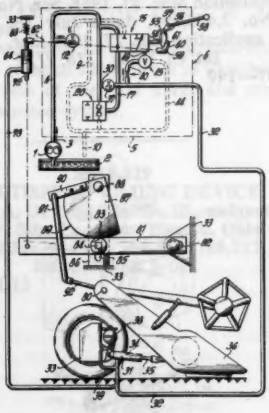
A harvesting machine which may be either self-propelled or tractor-mounted employs apparatus for guiding fruit-bearing plants into a picking mechanism wherein the plants are stripped of their produce at a pre-selected elevation by a plurality of elongate rotating flexible coils. Inasmuch as some plants possess a maturing characteristic wherein the lowermost fruit is the earliest to ripen, and as ripening is progressive from the bottom of the plant to the top of the plant, the axes of rotation of the flexible coils are disposed at an angle to the plants undergoing harvesting and are variable from a substantially vertical position to a variety of selectable angular positions in order that the plants may be progressively harvested from bottom or top

upon several time-spaced passes through the field. Preselection of the substantially vertical positions of the



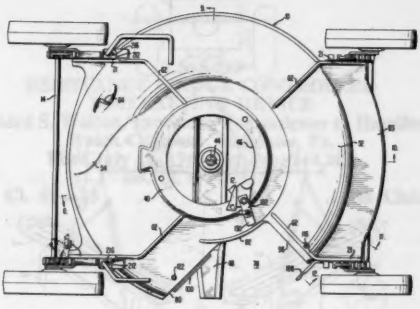
rotating flexible coils permits harvest of an entire crop at one time.

3,568,420
HYDRAULIC LIFTING APPARATUS FOR THE CUTTING PLATFORM OF HARVESTING MACHINERY
Friedrich-Wilhelm Höfer, Hofingen, and Gerhard Nonnenmacher, Korntal, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 23, 1968, Ser. No. 786,074
Claims priority, application Germany, Dec. 28, 1967, P 15 82 161.1
Int. Cl. A01d *67/00*
U.S. Cl. 56—208 **21 Claims**



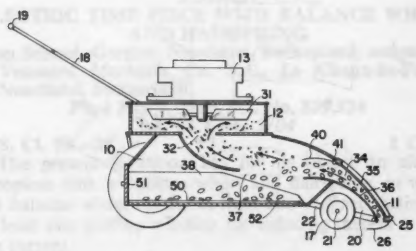
A linkage which interconnects the hydraulic control, the cutting platform, and a manual setting lever, to set cutting platform height over ground level, includes a first variable link element changeable in length in response to pressure changes in the hydraulic lifting cylinder for the cutting platform, and a second link element responsive to the position of the cutting platform with respect to the machine, so that the cutting platform will be at even height above ground level regardless of weight on the cutting platform and undulations in ground level.

3,568,421
LAWN MOWER
William R. Smith and Harold P. Jackson, McDonough, and Wallace A. Hanson, Riverdale, Ga., assignors to McDonough Power Equipment, Inc., McDonough, Ga.
Filed Mar. 12, 1968, Ser. No. 712,407
Int. Cl. A01d *55/18*
U.S. Cl. 56—255 **20 Claims**



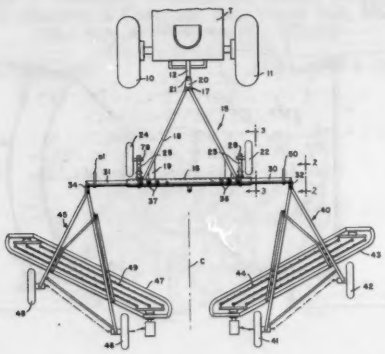
A power lawn mower including a housing having a top and a depending peripheral skirt enclosing a rotary cutting blade driven by a motor centrally mounted on the housing. Grass clippings cut by the blade are swept upwardly and annularly in the mower housing in an annular discharge duct which progressively increases in height from the rear to the front of the housing and terminates in an outlet which is connected either to a lateral discharge chute or rear discharge chute. Depending on the type of discharge desired, the discharge chutes are alternately attached to the mower housing in communication with the discharge passage. When the rear discharge chute is employed, it conveys grass clippings rearwardly and upwardly into a collector bag supported at the rear of the mower.

3,568,422
NUT HARVESTER
John A. Thies, Newton, N.C.
(675 Merritt Drive, Mobile, Ala. 36609)
Filed July 24, 1968, Ser. No. 747,236
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 **7 Claims**



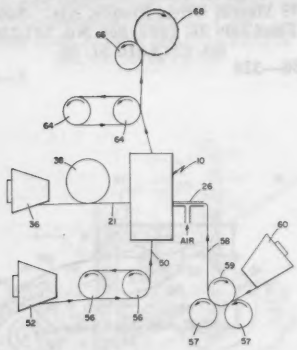
Gathers nuts or the like which are on the surface of the ground, by vacuum action, picks up the nuts along with some debris or other material and separates the nuts from the debris along a relatively short interval flow stream by the combined action of a serpentine flow stream, gravity, inertia and deflector fingers.

3,568,423
DUAL HITCH FRAME
John K. Hale and Charles B. Adams, New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Oct. 17, 1967, Ser. No. 678,772
Int. Cl. A01d 77/06
U.S. Cl. 56—377 2 Claims



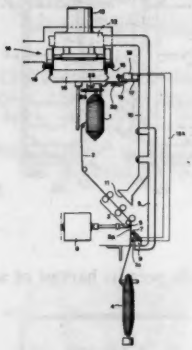
A dual hitch frame connectable to a tractor to be towed thereby over a field having hay to be raked and adapted to have connected to it a pair of side delivery rakes which deliver raked hay toward each other for deposit in a single windrow, said hitch frame comprising a horizontal transverse bar perpendicular to the direction of travel having a pair of laterally spaced hitch members to which the rakes are attached and having a pair of ground wheels.

3,568,424
PROCESS AND APPARATUS FOR PREPARING FLUID-TEXTURED YARN
Preston F. Marshall, 191 Gould St., Walpole, Mass. 02081
Filed Sept. 9, 1968, Ser. No. 758,404
Int. Cl. B65h 81/06; D02g 1/16
U.S. Cl. 57—6 9 Claims



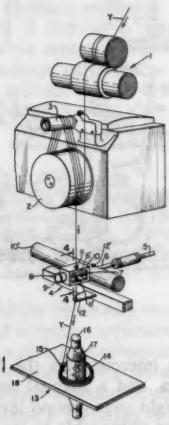
An apparatus and process are described for the fluid-texturing of continuous filament strands. Such a strand is fed through a fluid jet at at least half-sonic velocity into a generally cylindrical chamber containing a whirling body of fluid, causing the strand to erupt turbulently into said chamber. The texturized strand may be false-wrapped around a core strand which simultaneously passes axially through the chamber.

3,568,425
DEVICE FOR REDUCING YARN WASTAGE IN A TEXTILE MACHINE
Giorgio Zegna and Giulio Zegna, Vallemosso, Vercelli, Italy
Filed Oct. 9, 1968, Ser. No. 766,099
Claims priority, application Italy, Nov. 10, 1967, 53,679/67
Int. Cl. D01h 13/14, 13/18
U.S. Cl. 57—81 2 Claims



A textile machine such as a spinning frame has a yarn break detector which, upon detecting a broken yarn, causes an electrical actuator to operate so as to break the yarn ahead of a yarn-drawing region, thereby reducing wastage of the yarn upon breakage.

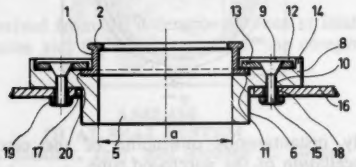
3,568,426
UNIFORMLY ENTANGLED MULTIFILAMENT YARN
Robert F. Whitley, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.
Original application Mar. 27, 1968, Ser. No. 716,477, now Patent No. 3,455,096, dated July 15, 1969. Divided and this application Jan. 27, 1969, Ser. No. 822,764
Int. Cl. D02g 1/16, 3/22
U.S. Cl. 57—140 3 Claims



Multifilament yarn is produced containing a series of uniformly spaced regions of entanglement, each of said regions involving a majority of the filaments constituting the yarn, as well as being of generally constant length and having a low variability in the degree of entangle-

ment. The production of such yarn can be coupled directly with other yarn treating operations, e.g., drawtwisting, without impairment of yarn quality due to variations in the tension of the running yarn. Yarns so produced have improved dyeing qualities.

3,568,427
MOUNTING FOR THE RINGS OF A RING RAIL
Arthur Wurmli, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Dec. 9, 1968, Ser. No. 782,039
Claims priority, application Switzerland, Dec. 13, 1967, 17,504/67
Int. Cl. D10h *7/64*
U.S. Cl. 57—122 4 Claims

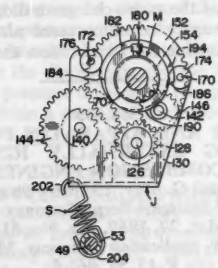


The holder is formed with a recess of exactly circular shape and the ring fits into the recess with a sliding fit. The clamping plates overlie the ring and hold the ring in place against removal. The holder is adjustably mounted in the ring rail so as to permit centering of the ring.

3,568,428
SHEATH/CORE COMPOSITE YARNS
Richard Stentiford, Pontypool, and Alan Roebuck, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,224
Claims priority, application Great Britain, Feb. 15, 1968, 7,461/68
Int. Cl. D02g *3/00, 3/02, 3/36*
U.S. Cl. 57—140 6 Claims

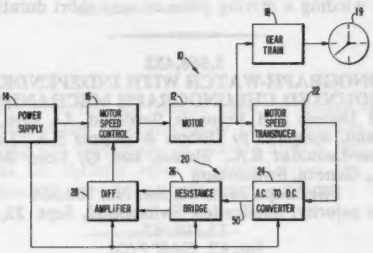
A bulky tension-stable yarn having stretch broken fibres as the core and crimped staple fibres as sheath is obtained by blending slivers of the said fibres and drafting and spinning on a worsted system.

3,568,429
MULTISPEED TIMING DEVICE
Richard A. De Lille, Moline, Ill., assignor to E. W. Bliss Company, Canton, Ohio
Filed Jan. 3, 1969, Ser. No. 788,717
Int. Cl. G04f *3/02*
U.S. Cl. 58—21.13 6 Claims



A timer has a manually operable dial for setting the timer to run for a predetermined period of time. The timer includes an electric motor for driving the dial back to a zero setting position. The motor drives the dial through a plurality of selective drive paths. The timer includes a shift means cooperable with the dial and with the drive paths. When the dial is set for short time periods, a high speed drive path is automatically engaged. When the dial is set for long time periods a low speed drive path is engaged. The timer automatically provides more accurate timing of short time periods.

3,568,430
RESISTANCE BRIDGE CONTROLLED TIMEKEEPING DEVICE
Richard S. Walton, Lancaster, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed July 11, 1968, Ser. No. 744,201
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 18 Claims



There is disclosed herein an electronic timekeeping device employing a passive circuit element as a master frequency reference, comprising a motor driven gear train and hands and a feedback control circuit for the motor including a speed transducer, and an error detection circuit including a resistance bridge and a differential amplifier. The amplifier output operates a control circuit which provides adjustable excitation for the motor to maintain the desired operating speed. An ultra high precision resistor with an extremely small resistance-temperature coefficient, is employed in the resistance bridge circuit as the master frequency reference.

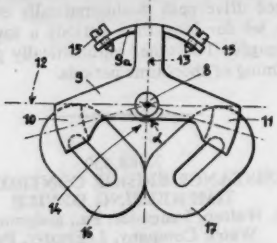
3,568,431
ELECTRIC TIME PIECE WITH BALANCE WHEEL AND HAIRSPRING
Jean Schaad, Gorgier, Neuchatel, Switzerland, assignor to Voumard Machines Co. S.A., La Chaux-de-Fonds, Neuchatel, Switzerland
Filed July 7, 1969, Ser. No. 839,534
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 1 Claim

The present invention has for its object an electric timepiece with a balance wheel and hairspring, in which the balance wheel carries at least two magnets acting on at least one pick-up winding for inducing therein a driving current.

In timepieces of the above mentioned type, the magnets of the balance wheel are generally situated in the immediate neighborhood of a diametral plane thereof, on both sides of this plane. Their center of gravity is situated in this plane at a great distance from the center of the balance wheel.

Such a construction necessitates a relatively heavy counterweight able to counterbalance the disequilibrium produced by the magnets which leads to a balance wheel

with a too large moment of inertia. The result is that the magnets must necessarily be of small dimension, or their weight, added to that of the counterweight, would lead to a balance wheel with a too large moment of inertia.



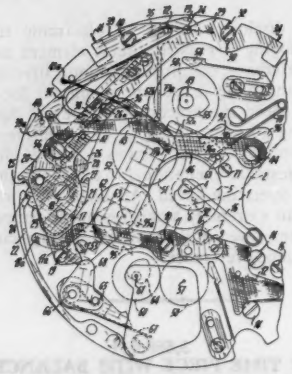
This limitation in the weight of the magnets of the balance wheel evokes a limitation in their section, so that if they move themselves during oscillations of the balance wheel, facing a pick-up winding, they can only induce in this winding a driving pulse of very short duration.

3,568,432

CHRONOGRAPH-WATCH WITH INDEPENDENTLY MOUNTED CHRONOGRAPH MECHANISM

Gerald Dubois and François Berthoud, Le Lieu, Switzerland, assignors to Dubois & Depraz S.A., Le Lieu, Heuer-Leonidas S.A., Bienne, and G. Leon Breitling S.A., Geneva, Switzerland

Filed Sept. 18, 1968, Ser. No. 760,556
Claims priority, application Switzerland, Sept. 22, 1967, 13,386/67
Int. Cl. G04f *7/04*
U.S. Cl. 58—59 **27 Claims**



A chronograph-watch with the elements of the chronograph mechanism carried by a frame independently of the clockwork.

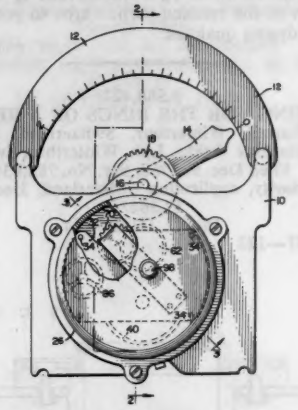
3,568,433

QUICK TIME WIPE-OFF FOR PARKING METERS

John W. Van Horn and Charles W. Hill, Russellville, and Jimmie Calvin Teague, Dover, Ark., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 28, 1968, Ser. No. 771,134
Int. Cl. G07c *1/30*
U.S. Cl. 58—141 **4 Claims**

A quick time wipe-off assembly for a coin controlled, parking meter including an escapement wheel axially slidable on a shaft and normally biased into frictional driving engagement with a pinion drive connected to the clockworks for time controlling the rate of unwinding of the clockworks and cancellation of purchased time from the meter. A manually operated wipe-off actuator disengages the wheel from the pinion to render the pinion free-running on the shaft and thereby permit rapid, substantially instantaneous unwinding of the clockworks and cancellation of the purchased time.

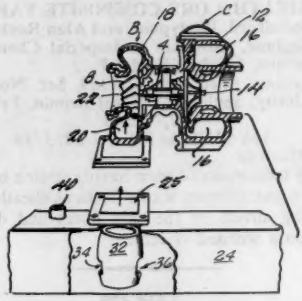


3,568,434

TURBO-CHARGER INITIATOR SYSTEM

William R. Dapprich, P.O. Box 112, Murrysville, Pa. 15668

Filed Nov. 4, 1968, Ser. No. 773,253
Int. Cl. F02b *37/00*
U.S. Cl. 60—13 **2 Claims**



Air and exhaust gas trapped in the exhaust manifold of the internal combustion engine of a turbo-compressor unit is directed through a bypass piping and distribution manifold system against the blades of the turbine, thus accelerating the turbine rotor up to useful speeds prior to the firing of the internal combustion engine; and the compressor side of the turbo-charger builds up and maintains a reserve supply of compressed air in the intake manifold of the engine for acceleration thereof.

3,568,435

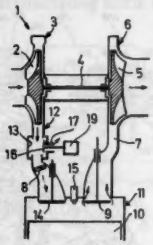
METHOD OF AND APPARATUS FOR SUPERCHARGING EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

Michael G. May, 15 Obere Strasse, 7 Stuttgart-Berg, Germany

Filed Mar. 27, 1969, Ser. No. 811,110
Claims priority, application Germany, Mar. 27, 1968, P 17 51 061.0
Int. Cl. F02b *37/08*; F04d *27/02*
U.S. Cl. 60—13 **13 Claims**

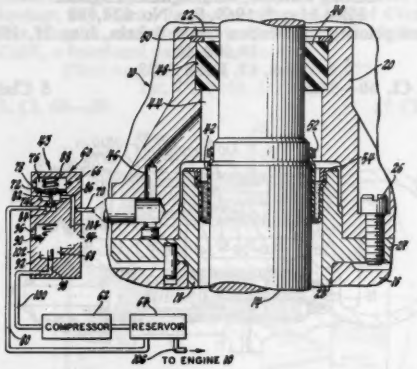
In supercharged internal combustion engines part of the compressed intake air is discharged from the intake con-

duit by means of a bypass adjusting mechanism which is responsive to pressure conditions in said conduit and which controls bypass openings therein with a varying



pressure derived from the difference between at least one static pressure and the total pressure of the compressed intake air.

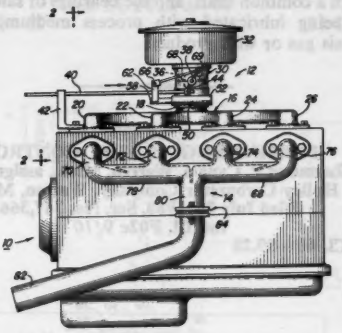
3,568,436
DUAL SEAL SYSTEM
Francis E. Heffner, Troy, and Richard R. Toepel, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 3, 1969, Ser. No. 795,895
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **1 Claim**



A dual seal system for sealing reciprocating rods in a Stirling engine and preventing an interchange of fluid between a crankcase and a work space containing a highly pressurized working fluid includes a flexible rolling diaphragm which forms a physical barrier to the interchange of fluid and a limited leakage seal which acts as a primary sealing element for the working fluid and controls the maximum pressure differential on the diaphragm. Pressure control means fluidly communicating with a chamber between the diaphragm and the limited leakage seal regulate the pressure differential on opposite sides of the diaphragm within a predetermined operating range.

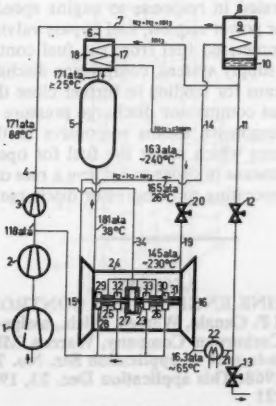
3,568,437
POLLUTION CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE
Southwick W. Briggs, 6240 Western Ave., Chevy Chase, Md. 20015
Filed Apr. 4, 1969, Ser. No. 813,675
Int. Cl. F01n *3/10;* **F02m** *23/02*
U.S. Cl. 60—30 **6 Claims**

Air pollution control apparatus for an internal combustion engine of the type including an air intake conduit including a throttle valve therein. The apparatus comprises air valve means for controlling the flow of outside air into said intake conduit downstream of said valve and linkage means for interconnecting the throttle valve and the air valve means to provide for an increase in the



flow of outside air into the conduit when the throttle valve is in an engine-idle or substantially closed position and for reducing the percentage of outside airflow into the conduit as the throttle valve is moved from the idle position towards an open or full power position.

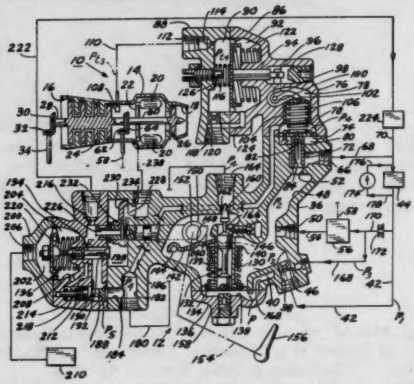
3,568,438
SYNTHESIS PLANT
Hans Meienberg, Forch-Scheuren, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Aug. 4, 1969, Ser. No. 847,055
Claims priority, application Switzerland, Aug. 23, 1968, 12,709/68
Int. Cl. F01k *25/00*
U.S. Cl. 60—36 **3 Claims**



A synthesis plant having a synthesis gas compressor, a reactor, a condenser and a circulating turbo-compressor connected into the closed circuit formed by said reactor and by the gas section of said condenser. A product steam turbine is provided for driving said circulating turbo-compressor, which is preceded by a heat exchanger for

heating the product serving as working medium for said product steam turbine, said heat exchanger being arranged at the outlet side of said reactor, the working medium thus being heated with process heat, said product steam turbine and said circulating turbo-compressor being arranged in a common housing and being directly coupled through a common shaft, and the bearings of said common shaft being lubricated with process medium, i.e. with synthesis gas or with product.

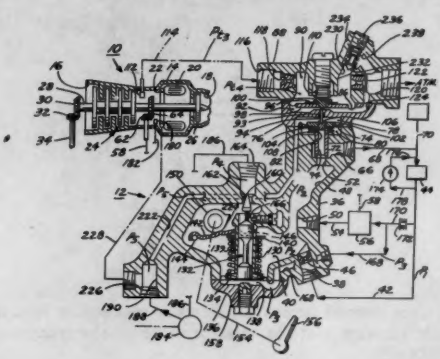
3,568,439
TURBINE ENGINE FUEL CONTROL
Raymond P. Canale, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Filed July 24, 1968, Ser. No. 747,366
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 **11 Claims**



A turbine engine fuel control is provided with a fuel inlet, metering-type governor valve assembly responsive to signals generated in response to engine speed and indicia of operator power request, fuel bypass valving means for returning unmetered fuel from the fuel control to an associated fuel supply system, compressor discharge pressure sensing means for tending to further close the bypass valving means as compressor discharge pressure increases and pressure responsive means responsive to the differential in pressures which meter the fuel for opening said bypass valving means in order to achieve a rate of metered fuel flow corresponding to compressor discharge pressure.

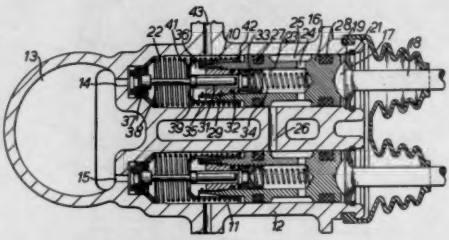
3,568,440
TURBINE ENGINE FUEL CONTROL
Raymond P. Canale, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.
Continuation-in-part of application Ser. No. 747,366, July 24, 1968. This application Dec. 23, 1968, Ser. No. 786,321
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.28 **8 Claims**

A turbine engine fuel control is provided with a fuel inlet, metering-type governor valve assembly responsive to signals generated in response to engine speed and indicia of operator power request, fuel bypass valving means for returning unmetered fuel from the fuel control to an associated fuel supply system, compressor discharge pressure sensing means for tending to further close the bypass valving means as compressor discharge pressure increases and pressure responsive means responsive to the differential in pressures which meter the fuel for opening said



bypass valving means in order to achieve a rate of metered fuel flow corresponding to compressor discharge pressure.

3,568,441
TWO PEDAL HYDRAULIC BRAKING SYSTEM
Stanley Walker, Birmingham, England, assignor to Girling Limited, Birmingham, England
Filed May 7, 1969, Ser. No. 824,380
Claims priority, application Great Britain, June 21, 1968, 29,600/68
Int. Cl. F15b *7/08*
U.S. Cl. 60—54.5 **5 Claims**

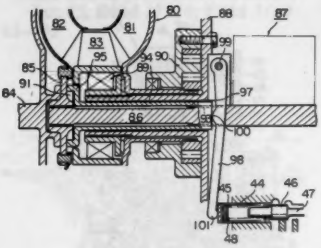


In a two-pedal hydraulic braking system in which brakes on wheels on opposite sides of a vehicle are applied by fluid from the pressure spaces of two master cylinders of which the pistons are actuated by separate pedals, cross compensation between the brakes on opposite sides of the vehicle is provided by a transfer passage communicating with the pressure spaces of the two cylinders through axial passages in the pistons controlled by normally closed transfer valves which are opened by movement of the pistons in the brake-applying direction.

3,568,442
HYDRAULIC PRESSURE TO AN AUTOMATIC TRANSMISSION OF AN AUTOMOTIVE VEHICLE
Keizaburo Usui, Ichikawa, and Kazuyoshi Hiraiwa, Tachikawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed June 30, 1969, Ser. No. 837,641
Claims priority, application Japan, Sept. 18, 1968, 43/67,090
Int. Cl. F16d *33/10;* **F16b** *47/06*
U.S. Cl. 60—54 **5 Claims**

A device for controlling a hydraulic pressure in a hydraulic control system to an automatic transmission of

an automotive vehicle in response to the changes of the torque of the turbine shaft of the torque converter. This control is performed by converting the twisting torque occurring in a power transmitting shaft within a predeter-

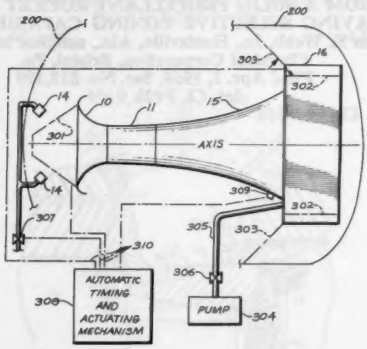


mined distance into an axial displacement which causes a movement of a lever with which a hydraulic control valve is so actuated as to open or close a by-pass passage of an oil pump as a source of hydraulic pressure.

3,568,443
STARTING APPARATUS FOR A FLUID-DYNAMIC ENGINE

Giusto Fonda-Bonardi, Los Angeles, Calif., assignor to Robert S. Estes, Los Angeles, Edward S. Merrill, Palm Springs, Jay Kurtz, James Linahan, and Carl Clement, Los Angeles, and Royal M. Galvin, Pacific Palisades, Calif., a fractional part interest to each

Filed Aug. 14, 1969, Ser. No. 849,973
Int. Cl. F01k *3/18*
U.S. Cl. 60—59 **10 Claims**

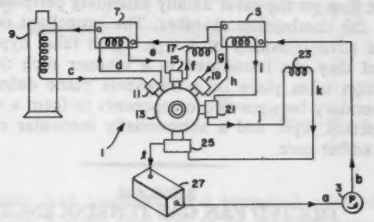


This invention relates to a fluid-dynamic engine wherein a gas is accelerated through the engine at the speed of sound at the sonic speed of the gas and imparting energy to the gas while maintaining it at the sonic speed. The engine may comprise a duct having a sonic duct section interposed between convergent and divergent sections so that it is successively accelerated to the sonic speed through the convergent section and moves through the sonic section at the sonic speed. The engine includes starting means for momentarily imparting a velocity equal to the speed of sound when the gas is quiescent to accelerate it to sonic speed. The starting means may also comprise means for isolating a portion of the generating fluid path while the gas is quiescent and evacuating the isolated path so that the fluid outside the isolated path may be accelerated to sonic speed and then passing it through the isolated path to start the engine.

3,568,444
REGENERATIVE-RECOMPRESSION-REHEAT VAPOR CYCLE METHOD FOR POWER PLANTS

Marion K. Harris, 14737 Charmeran Ave., San Jose, Calif. 95124

Filed June 26, 1969, Ser. No. 836,888
Int. Cl. F01k *19/04*
U.S. Cl. 60—65 **13 Claims**

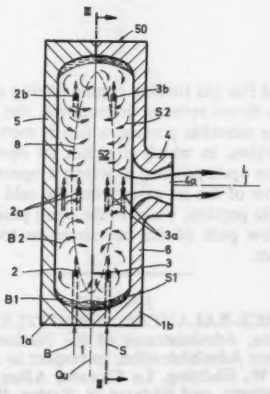


A method of operating a vapor cycle power plant, e.g. a steam power plant, including steps of regeneration, recompression and reheating to increase the net work output and efficiency.

3,568,445
THRUST GAS GENERATOR AND METHOD OF OPERATION

German Munding, Bad Friedrichshall, and Gerrit Lammers, Neuenstadt, Germany, assignors to Bolkow Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Oct. 29, 1968, Ser. No. 771,565
Claims priority, application Germany, Nov. 20, 1967, P 16 26 070.1
Int. Cl. F02k *9/02*
U.S. Cl. 60—211 **14 Claims**



A rocket thrust gas generator or thrust engine includes a relatively shallow depth transversely widened combustion chamber having means for introducing a liquid fuel and an oxygen carrier at separate axially spaced locations tangentially into the combustion chamber in the form of adjacent whirling flows around the combustion chamber wall. The introduction is in a manner to cause axial stratification of the propellant components which is produced by the intermittent or continuous axial juxtaposition of the two components. The shallow depth combustion

chamber is provided with a weir in one embodiment which separates the tangentially directed circumferential flows of the two separate propellant components. The combustion chamber advantageously includes a centrally arranged and axially extending thrust nozzle discharge.

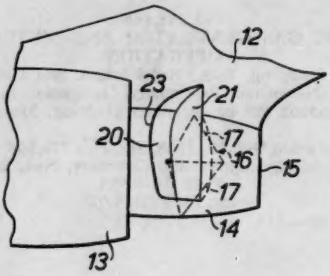
In accordance with the method of the invention one propellant component is directed tangentially against the walls of the combustion chamber and deposited on the wall on half the axial length of the combustion chamber periphery, and another propellant component is deposited for flow on the other axially extending peripheral portion of the combustion chamber. The propellant components are advantageously of a type which react hypergolically and they are introduced in a manner such that the reaction takes place in a transverse plane defined by the boundary between two components to form a central hot reaction layer and a substantially lenticular combustion chamber core.

3,568,446

DUCTED FAN GAS TURBINE ENGINE

John Albert Mullins and Peter Arthur Ward, Derby, England, assignors to Rolls-Royce Limited, Derby, England

Filed June 17, 1969, Ser. No. 833,938
Claims priority, application Great Britain, June 26, 1968, 30,530/68
Int. Cl. F02k 1/20
U.S. Cl. 60—226 **5 Claims**



A ducted fan gas turbine engine having a jet pipe, within which a thrust reverser is mounted, the jet pipe having at least one movable portion which is movable between a closed position, in which it closes an opening in the jet pipe, and an open position in which it opens the said opening to a flow of the jet gases from the said thrust reverser, the movable portion, when in the open position, extending into the flow path of the fan air so as to cause reversal of the latter.

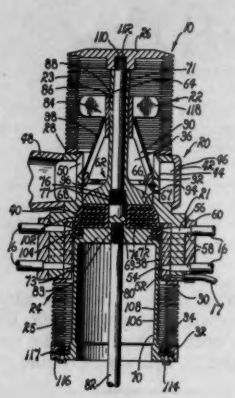
3,568,447

FORCE-BALANCED, THROTTLE VALVE

T. O. Paine, Administrator of the National Aeronautics and Space Administration, in respect to an invention of Robert W. Riebling, La Canada, Allan R. McDougal, La Crescenta, and Richard N. Porter, Redondo Beach, Calif.

Filed Mar. 18, 1969, Ser. No. 808,192
Int. Cl. F02k 9/02; F16k 31/12
U.S. Cl. 60—243 **14 Claims**

A force-balanced, throttle valve adapted to respond to a fixed force for imposing selected changes in the flow rates of a stream of fluid directed therethrough, being particularly suited for use in pressure systems, such as rocket motor fuel systems, wherein increasing flow rates serve to increase pressures within the system, and characterized by a throttle plug adapted to be linearly reciprocated to selected metering positions for establishing variable flow rates for fluid flowing through the valve; a pressure chamber including therein an actuator adapted to apply a variable force to the plug for urging the plug in a first direction with a first force, varied at a rate commensurate with concurrent changes in system pressures; and biasing



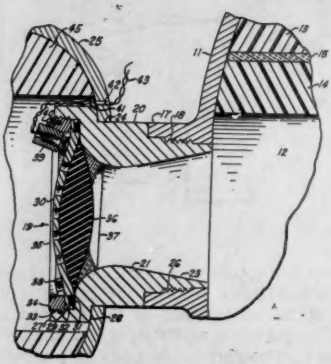
means operatively associated with the throttle plug adapted to act in opposition to the first force for urging the plug in its opposite direction with a variable second force equal to the first force so that a continuous force-balance is achieved between the opposing forces acting on the plug.

3,568,448

IGNITION SYSTEM FOR IGNITING A GAS GENERATOR BY THE USE OF COMBUSTION GASES FROM A SOLID PROPELLANT ROCKET MOTOR HAVING SELECTIVE ZONING CAPABILITIES

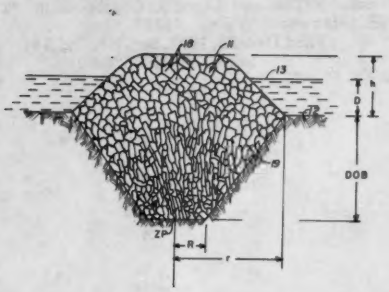
Glenn E. Webb, Jr., Huntsville, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Apr. 1, 1969, Ser. No. 812,109
Int. Cl. F02k 9/04
U.S. Cl. 60—250 **2 Claims**



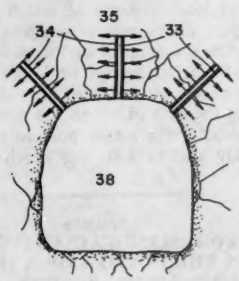
An ignition system positioned between the combustion chamber of a gas generator having a solid propellant grain therein and the combustion chamber of a solid propellant rocket motor having selective zoning capabilities so that when the ignition system is operated the combustion gases from the combustion chamber of the solid propellant rocket motor will enter the combustion chamber in the gas generator and ignite the solid propellant grain therein.

3,568,449
CONSTRUCTION OF LAND MASSES BOUNDED BY WATER
Mitchell A. Lekas, Concord, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 2, 1969, Ser. No. 863,167
Int. Cl. E02d 17/16; F42d 3/04
U.S. Cl. 61—35 2 Claims



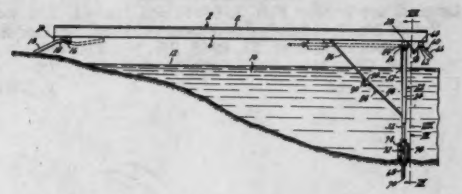
A land mass, such as an island, jetty, or the like is constructed in a body of water by explosively mounding the water body floor to form a mass of broken rock, or so-called retarc (invert crater) rising above the water surface.

3,568,450
METHOD FOR COUNTERSTRESSING IN SITU ROCK FOR SUPPORT OF UNDERGROUND OPENINGS
Jerry M. Whiting, Dallas, Tex., assignor to Atlantic Richfield Company, a fractional part interest
Filed May 28, 1969, Ser. No. 828,513
Int. Cl. E21d 21/00
U.S. Cl. 61—45 4 Claims



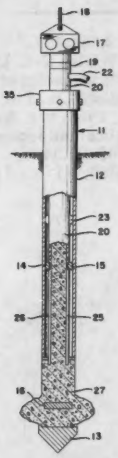
In rock surrounding an underground excavation which must have a man-made support system to ensure a required degree of structural stability and which is subjected to certain stress conditions, an inflatable device or rock jack is inserted into a drill hole or slot in the rock. The rock jack is inflated slightly by fluid pressure to take up any space between the jack and the in situ rock and is subsequently pressurized to the limit of its capability. High compressive force is transmitted to the rock, thus creating compressive stress in monolithic rock and increasing confinement of and friction between proximal blocks of rock which are separated by narrow fractures, tension cracks, joint planes or similar structural defects. Such action maintains or increases the natural capability of the rock to support itself and to remain stable by utilizing the inherent compressive strength of the rock.

3,568,451
PORTABLE DOCK
Victor H. Gustin, Kansas City, Mo.
(204 Queens Lane, Blue Spring, Mo. 64015)
Filed Dec. 17, 1968, Ser. No. 784,450
Int. Cl. E02b 3/20
U.S. Cl. 61—48 3 Claims



A portable dock consisting of a gangplank adapted to be carried by a small boat and to be extended between said boat and the shore, said gangplank having legs at both the shore end and boat end thereof, all of said legs being foldable against the gangplank for convenience of storage, and the legs at the boat end being adjustable extensible to engage the bottom to compensate for variable water depths, and for irregular contour of the bottom.

3,568,452
METHOD AND APPARATUS FOR FORMING BULBULAR BASE PILES
Felix Rayston Stiffler, Jr., Duxburg, Mass., assignor to Shell Oil Company, New York, N.Y.
Filed Aug. 8, 1968, Ser. No. 751,260
Int. Cl. E02d 5/34, 5/38
U.S. Cl. 61—53.6 4 Claims



A borehole forming tool or drive pipe is provided with an ejection chamber at one end and with means for connecting the tool to a sonic driving head. A sonic driving head is provided with a driving mandrel which is constructed to telescopically receive the tool and adapted to drivingly engage the drive pipe in one position and engage a piston in the ejection chamber of the pipe in a second position. The ejection is filled with a charge of solidifiable material such as cement and then driven sonically to the desired depth in an earth formation, the

mandrel is then rotated to engage the piston and the charge of material then sonically ejected from the chamber and into the form of a radially-extensible mass in the formation.

3,568,453

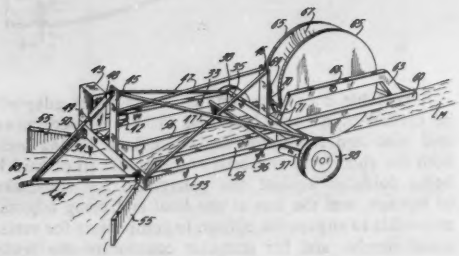
APPARATUS FOR FORMING DIKES

Robert M. Ziegenmeyer, Sutter, Calif., assignor to Dart Industries Inc.

Original application Feb. 2, 1965, Ser. No. 429,738, now Patent No. 3,415,062, dated Dec. 10, 1968. Divided and this application Sept. 23, 1968, Ser. No. 810,406

Int. Cl. A01b *13/07;* **E02b** *7/06;* **E02d** *17/00*

U.S. Cl. 61—63 **9 Claims**



The present invention relates to an apparatus for forming barriers for impounding water for use in diking rice fields or the like comprising a vehicle provided with means for gathering earth for a limited area along both sides of a desired path, forming the gathered earth into a mound of the desired height, width and shape, covering the formed mound with plastic to prevent weed growth and erosion and embedding the film in the earth to prevent accidental removal of the plastic from the mound.

3,568,454

APPARATUS FOR WORKING UNDER WATER

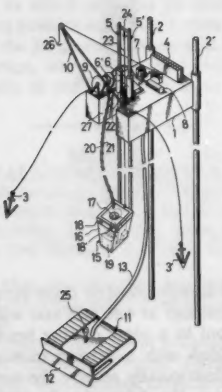
Yasuo Itami, Tokyo, Japan, assignor to Japan Development and Construction Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1969, Ser. No. 806,902

Claims priority, application Japan, Oct. 18, 1968, 43/91,343

Int. Cl. B63c *11/40, 11/42*

U.S. Cl. 61—69 **6 Claims**



Apparatus for working under water comprising a combination of a submergible working machine such as a bulldozer and a floating body equipped with various devices necessary for operating the working machine. A submergible control chamber accommodating an operator is suspended into water from the floating body to enable the operator to control the operation of the working machine.

3,568,455

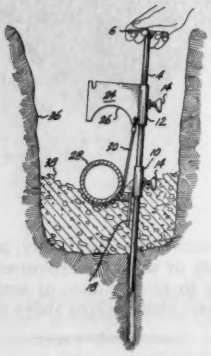
METHOD OF LAYING PIPE IN OR ON A BED OF PARTICLE MATERIAL OR IN A TRENCH

Robert E. McLaughlin, Rte. 1, Box 52, Sedro Woolley, Wash. 98284, and Lloyd J. Charbonneau, 321 316th NE., Stanwood, Wash. 98292

Filed Dec. 23, 1968, Ser. No. 785,941

Int. Cl. B63b *35/04*

U.S. Cl. 61—72.1 **5 Claims**



A method and apparatus are disclosed for laying pipe, and particularly sectional pipe such as sewer and drain tile, in or on a bed of particle material such as gravel or crushed rock. According to the method, a series of posts are removably mounted at spaced positions on the ground along the course of the pipe, and the pipe is releasably supported on the posts in a raised condition above the ground, while the particle material is deposited under the pipe to at least a depth at which the deposit can sustain the pipe in its raised condition. Then the pipe is released from the support of the posts, and the posts are removed from the deposit while the deposit sustains the condition of the pipe. Where the pipe is divided into sections, as in the case of sewer and drain tile, each section is supported on a single post so that the sections can be quickly aligned with one another along the desired slope.

3,568,456

METHOD FOR MANUFACTURING LONG PIPE LINES ON THE BOTTOM OF A DEEP WATER

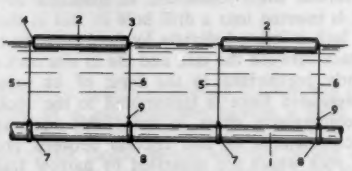
Jan Hendrik van Loenen, Beverwyk, Netherlands, assignor to Netherlands Offshore Company N.V., The Hague, Netherlands

Filed Dec. 23, 1968, Ser. No. 786,164

Claims priority, application Great Britain, Dec. 29, 1967, 59,136/67

Int. Cl. F16l *1/00;* **B63b** *35/42*

U.S. Cl. 61—72.6 **2 Claims**



The present invention relates to a method of manufacturing long pipe lines on the bottom of a deep water, such as the sea bottom, according to this method the pipe

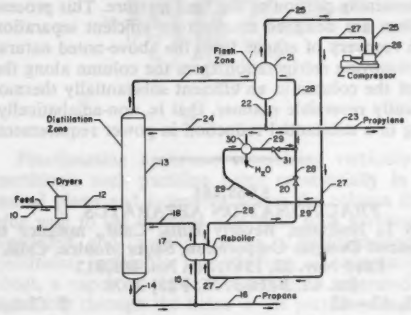
line sections are prefabricated in a length of half a mile or more and subsequently transported towards the destination by supporting the sections deep below water level by means of a number of vertical floats spaced at regular intervals over the length of the sections. When in place the floats will intersect the water level with a relatively small cross section.

3,568,457

SEPARATION OF PROPANE AND PROPYLENE BY DISTILLATION

Terrence M. Briggs and Valentin H. Segers, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 5, 1969, Ser. No. 804,549
Int. Cl. F25j 3/02, C07c 9/00
U.S. Cl. 62—28 4 Claims



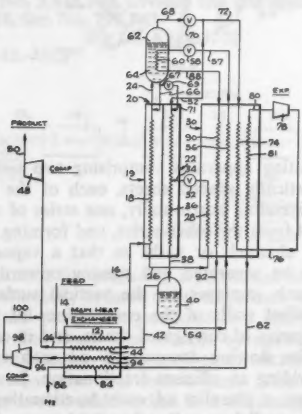
Process for separating propane from propylene via fractionation means including the use of a heat pump to supply heat to the fractionator reboiler.

3,568,458

GAS SEPARATION BY PLURAL FRACTIONATION WITH INDIRECT HEAT EXCHANGE

Michael L. Hoffman, Beverly Hills, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 7, 1967, Ser. No. 681,284
Int. Cl. F25j 3/02
U.S. Cl. 62—31 14 Claims



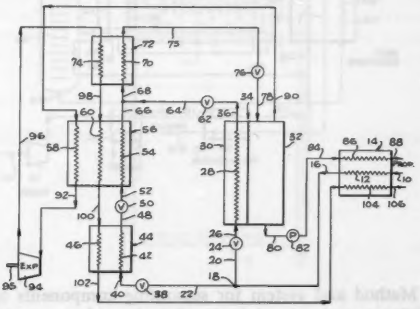
Method and system particularly designed for separating methane from mixtures of nitrogen and methane, which involves, according to one embodiment, separating a mixture of methane and nitrogen in an initial separation stage to produce said nitrogen vapor and a methane-rich liquid of methane and nitrogen, feeding the methane-rich liquid to a fractionating column in heat exchange relation with the initial separation stage, withdrawing methane in substantially pure form from the bottom of the fractionating column, separating a portion of the last-mentioned liquid methane, subcooling the separated portion of liquid methane, throttling the subcooled liquid methane and passing it through a condenser in heat exchange relation with nitrogen withdrawn as overhead from the initial separation zone, to condense such nitrogen and vaporize the methane, supplying condensed liquid nitrogen as reflux to the top of both the initial separation zone and fractionating column, and passing nitrogen vapor and vaporized methane from the condenser into heat exchange relation with liquid methane refrigerant for subcooling same before the liquid methane is throttled and passed to the nitrogen condenser. The nitrogen and methane vapor streams from the condenser are also passed in heat exchange relation with the methane-rich liquid containing nitrogen, from the bottom of the initial separation zone, prior to its being throttled and introduced as feed into the fractionating column. Also, preferably the vaporized nitrogen from the condenser is brought in several passes in series, in heat exchange relation with the liquid methane refrigerant for subcooling same, employing work expansion after one or more of such passes for greater efficiency. The associated initial separation zone and main fractionating column in the system are operated under conditions to effect a "differential distillation in the column.

3,568,459

SEPARATION OF MIXTURES OF NITROGEN AND HYDROCARBONS

Michael L. Hoffman, Beverly Hills, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 1, 1967, Ser. No. 687,358
Int. Cl. E25j 5/00
U.S. Cl. 62—34 15 Claims



Method and system particularly designed for separating methane from mixtures of nitrogen and methane, and which generally contain a major proportion of nitrogen, which involves, according to one embodiment, cooling a compressed feed mixture, e.g., one containing 60% nitrogen and 40% methane, passing a major portion, e.g., 90%, of the cooled compressed feed mixture into indirect heat exchange relation with a fractionating column to supply heat to the column, further cooling the remaining minor portion, e.g., 10%, of the cooled compressed feed mixture, withdrawing the resulting cooled major portion of the compressed feed mixture from heat exchange relation with the column, combining the last-mentioned major

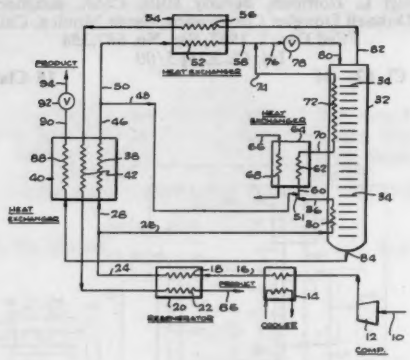
portion of the compressed feed mixture with the further cooled minor portion of the compressed feed mixture, further cooling the resulting combined compressed mixture, reducing the pressure of such combined compressed mixture, introducing the last-mentioned mixture as feed into the fractionating column, effecting a separation of the last-mentioned mixture in the column, withdrawing hydrocarbon in substantially pure liquid form from the bottom of the fractionating column, withdrawing nitrogen containing a minor portion of hydrocarbon, as overhead vapor from the fractionating column, and passing such overhead vapor into heat exchange relation with the minor portion of the compressed feed mixture and with the combined compressed mixture for further cooling same as aforesaid. Preferably, the overhead vapor from the fractionating column is brought in several passes in series, in heat exchange relation with the minor portion of the compressed feed mixture and with the combined compressed mixture, employing work expansion following at least one of such passes for greater efficiency. There is recovered substantially pure hydrocarbon product at a pressure close to that of the feed pressure, and by allowing some of the hydrocarbon to be taken off with the overhead nitrogen from the column and which is discarded as waste, substantially no net external power is required.

3,568,460

SEPARATION OF GAS MIXTURES BY FRACTIONATION WITH INDIRECT HEAT EXCHANGE

Michael L. Hoffman, Los Angeles, and Henry Huang, Inglewood, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 4, 1968, Ser. No. 772,898
Int. Cl. F25j *3/02*
U.S. Cl. 62—34 **19 Claims**



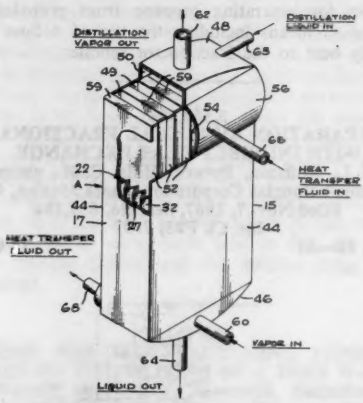
Method and system for separating components of gas mixtures such as mixtures of hydrocarbons containing from 1 to about 4 carbon atoms, and particularly designed for recovery of hydrocarbons heavier, i.e., of higher molecular weight, than methane from natural gas containing a major proportion of methane and a minor proportion of ethane and which may also contain small amounts of propane, and other heavier hydrocarbons, which involves, according to one embodiment, cooling a compressed feed mixture of such natural gas, dividing the cooled compressed feed mixture into a first portion and a remaining portion, and passing the first portion of such cooled compressed feed mixture in heat exchange relation along the lower portion of a distillation column to further cool the first portion of the feed mixture and supply reboil heat to the lower portion of the column. Such further cooled first portion of the feed mixture is withdrawn from heat exchange relation with the column, is additionally cooled by external refrigeration and such additionally cooled first portion of the feed mixture is passed in heat exchange relation along the upper portion of the distillation column to further cool the last-mentioned portion of the feed mixture and providing reboil heat in the upper portion of the column. The remaining portion of the cooled compressed feed mixture is further cooled and combined with the cooled portion of feed mixture in liquid form withdrawn from heat exchange relation with the upper portion of the column, and the resulting combined cooled feed mixture is introduced into the top of the column as feed for the column. A separation of the feed mixture in the column is effected by a non-adiabatic distillation in the column, and a liquid bottoms product is withdrawn consisting essentially of substantially pure ethane and an overhead product consisting essentially of methane is obtained, which is used to cool the above-noted remaining portion of the feed mixture. This process and system are designed to effect an efficient separation for high recovery of ethane from the above-noted natural gas by removing refrigeration from the column along the length of the column in an efficient substantially thermodynamically reversible manner, that is, non-adiabatically, resulting in a substantial reduction in power requirement.

3,568,461

FRACTIONATION APPARATUS

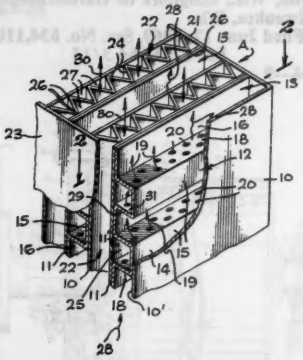
Michael L. Hoffman, Beverly Hills, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 22, 1967, Ser. No. 685,012
Int. Cl. B01d *3/16*; F25j *3/00*
U.S. Cl. 62—42 **5 Claims**



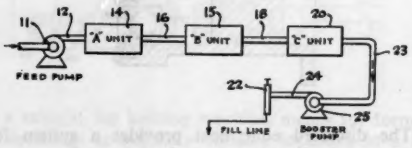
Fractionating apparatus comprising two series of corrugated vertically spaced sheets, each of the two series of sheets extending horizontally, one series of such sheets being offset from the other series, and forming a plurality of vertical channels or paths so that a vapor or vapor mixture to be separated and passing upwardly through such channels impinges on the vertical surfaces of the alternate offset walls of the corrugations of the respective offset series of corrugated sheets, and in contact with a liquid film flowing downwardly on such vertical surfaces, providing an efficient fractionation. In a preferred embodiment, a plurality of such fractionating units are positioned parallel to each other, with a passage or passages for an external heat transfer fluid provided between adjacent units to supply heat to or to remove heat from the adjacent fractionating units.

3,568,462
FRACTIONATING DEVICE
Michael L. Hoffman, Beverly Hills, and Robert L. Hoskinson, Pacific Palisades, Calif., asignors to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Nov. 22, 1967, Ser. No. 685,013
Int. Cl. B01d 3/16; F25j 3/00
U.S. Cl. 62—42 9 Claims



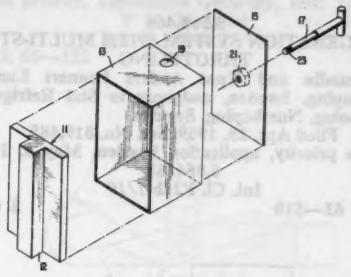
Fractionating apparatus comprising vertically spaced partitions, each partition being substantially in a horizontal plane and extending across the column from one side wall to the opposite side wall, such partitions being apertured, and forming a series of enclosed spaces, such partitions preferably formed from a corrugated metal sheet, a vapor or vapor mixture to be separated passing upwardly through the holes in the partitions and in contact with a condensed liquid film flowing downwardly along the surface of the horizontal partitions and the vertical intermediate walls, providing an efficient fractionation. In a preferred embodiment, a plurality of such fractionating units are positioned parallel to each other, with a passage or passages for an external heat transfer fluid provided between adjacent units to supply heat to or to remove heat from the adjacent fractionating units.

3,568,463
APPARATUS FOR FATTY MATERIALS
Charles E. McMichael, Louisville, Ky., and William A. Singleton, Pittsburgh, Pa., assignors to Chemetron Corporation, Chicago, Ill.
Original application Apr. 20, 1966, Ser. No. 543,832, now Patent No. 3,455,700. Divided and this application Dec. 30, 1968, Ser. No. 798,849
Int. Cl. A23d 5/02
U.S. Cl. 62—343 4 Claims



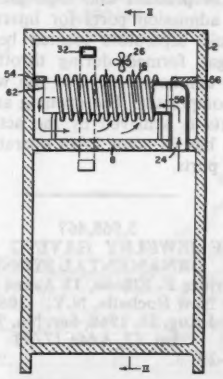
An apparatus for preparing a plasticized fatty material which substantially reduces tempering times. A molten fat is cooled and partially crystallized at a first temperature range at a first stage, then worked by agitation to effect partial crystallization at a second temperature higher than the first temperature in a second stage. Subsequently, the material is cooled and worked in a third stage at a temperature lower than the second temperature and at about the same or a lower temperature than in the first stage to form small and well distributed crystal nuclei in the beta prime form.

3,568,464
FREEZE BRANDING IRON
James E. Drayson, Longmont, Colo.
(1144 Harvard Ave., Billings, Mont. 59102)
Filed Mar. 10, 1969, Ser. No. 805,440
Int. Cl. F25d 3/00
U.S. Cl. 62—293 7 Claims



This disclosure describes a freeze branding iron comprising a coolant reservoir having a brand configuration projecting outwardly from one side of the reservoir. A handle projects outwardly from the reservoir on the side opposite to the brand configuration side. The coolant reservoir holds a suitable refrigerant, such as a mixture of Dry-Ice and alcohol, for example.

3,568,465
SINGLE EVAPORATOR FOR COMBINATION REFRIGERATION APPARATUS
Robert C. Jung, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 5, 1969, Ser. No. 830,755
Int. Cl. F25d 17/06
U.S. Cl. 62—419 10 Claims



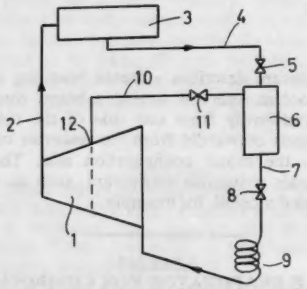
In evaporator is disclosed for use in a refrigerator of the type having both a frozen food compartment and a fresh food compartment in air flow communication with an evaporator chamber enclosing a single evaporator. The refrigerant tubing of the evaporator is flattened and spirally wound about, and in contact with, a metal cylinder through which the moisture laden return air from the fresh food compartment is initially directed for entry into the evaporator chamber. The moisture in the return air is deposited as frost on the internal walls of the cylinder, refrigerated by conductance through the tubing so that substantially dry, cool air exits from the cylinder to mix with the relatively dry return air of the frozen food compartment directed to the evaporator chamber. The mixed

air is drawn over the exterior walls of the cylinder and in contact with the flattened walls of the closely spaced coils of the refrigerant tube, further cooling the air for return to the respective compartments. A defroster is also provided in the cylinder for periodic defrost of the frost accumulation.

3,568,466
REFRIGERATION SYSTEM WITH MULTI-STAGE THROTTLING

Tore Brandin and Knut Anders Lennart Lundberg, Norrkoping, Sweden, assignors to Stal Refrigeration Aktiebolag, Norrkoping, Sweden

Filed Apr. 28, 1969, Ser. No. 819,685
Claims priority, application Sweden, May 6, 1968, 6,054/68
Int. Cl. F25b *1/10*
U.S. Cl. 62—510 **2 Claims**

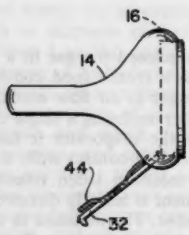


A refrigerating system provided with multi-stage throttling and with a positive displacement compressor of the rotary type, the casing of the compressor being provided between its low pressure and high pressure ports with one or more admission ports for intermediate pressure gas from liquid separators located between throttling points. The gas formed during throttling is supplied through these admission ports to the working compartment of the compressor. The opening and closing of the admission ports is achieved by the action of the compressor which has its rotor lobes operative as valves for the admission ports.

3,568,467
ARTICLE OF JEWELRY HAVING CHANGEABLE ORNAMENTAL STONE

Bernice F. Ellison, 11 Aspen Road, New Rochelle, N.Y. 10804

Filed Aug. 21, 1968, Ser. No. 766,014
Int. Cl. A44c *17/02*
U.S. Cl. 63—29 **3 Claims**

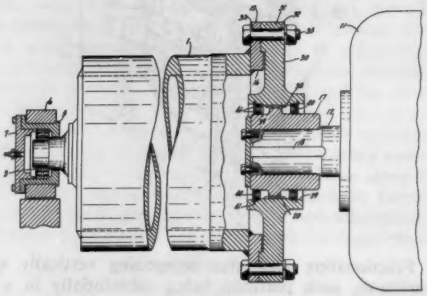


An article of jewelry having a mounting in which is fastened an oval member to hold a removable ornamental stone. The stone is held in place by a second oval member fitted within said first oval member and including a hinged connection to maintain the members associated while the stone is being changed.

3,568,468
CABLE DRUM MOUNTING FOR A CRANE

Max J. Dechantsreiter, Milwaukee, and Wilbur E. Bartley, West Bend, Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.

Filed June 17, 1969, Ser. No. 834,110
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 **5 Claims**

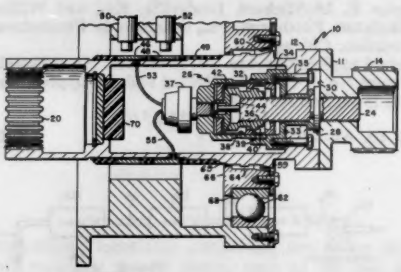


A spherical bearing for mounting one end of a crane cable drum to a power transmission whereby connection between the drum and its driving member can be easily made and which provides for misalignment between the parts.

3,568,469
SYSTEM FOR INSTANTANEOUSLY DISCONNECTING A ROTATING LOAD

James Wade, Stratford, and Gordon L. Andrews, New Haven, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed June 27, 1969, Ser. No. 837,015
Int. Cl. F16d *9/00*
U.S. Cl. 64—28 **6 Claims**



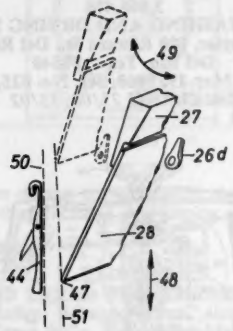
The disclosed equipment provides a system for instantaneously disconnecting a load from the output shaft of a gas turbine engine while the engine is operating at full power and speed. The equipment utilizes a connecting shaft constructed in two separable halves, the junction being in the form of a face spline held together by a single, axially positioned stud and an explosive nut. The shape of the face spline is such that the forces of rotation tend to instantaneously separate the two halves of the shaft when the explosive nut is released. The system includes means for preventing bounce-back, and a secondary bearing system for supporting the shaft after separation.

3,568,470

FALL-PLATE ARRANGEMENT FOR A RASCHEL KNITTING MACHINE

Karl Kohl, Offenbacher Landstr. 20, Hainstadt (Main), Germany

Filed Oct. 31, 1968, Ser. No. 772,139
Claims priority, application Germany, Nov. 3, 1967, P 16 35 874.0
Int. Cl. D04b *23/00*
U.S. Cl. 66—86 2 Claims



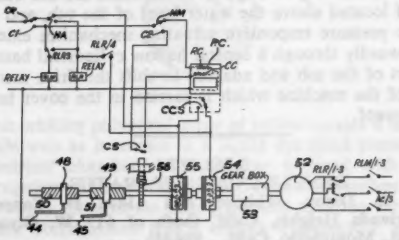
The fall-plate of a raschel knitting machine is mounted on the guide bar hangers in such a position that the plate is obliquely inclined to the common plane of the knitting needles when the hanger is in the median position of its oscillating movement. The movement of the fall-plate toward and away from the needles is guided in such a manner that the lower operating edge of the plate moves in a path substantially parallel to the common needle plane.

3,568,471

STRAIGHT BAR KNITTING MACHINES

Raymond Blood, Shepshed, England, assignor to William Cotton Limited

Filed Dec. 9, 1968, Ser. No. 782,054
Claims priority, application Great Britain, Dec. 23, 1967, 58,558/67
Int. Cl. D04b *11/06*
U.S. Cl. 66—89 7 Claims



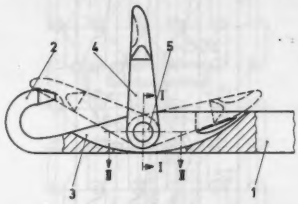
In a straight bar knitting machine, means for forming loop doublings at infinitely variable locations in a last knitted course of rib fabric to reduce the course length to that required for non-rib fabric to follow on, wherein the usually operable narrowing head has selector elements corresponding to the needles and selectively operable each time the narrowing head is operated to render groups of loop transfer points effective on their corresponding needles, to form loop doublings, and wherein varied group selection is obtained by oppositely adjusted control bars under control of lead screws, and the lead screws infinitely adjusted by electric means including a motor and counter means under control of a punched chart programming means.

3,568,472

LATCH NEEDLE FOR KNITTING MACHINES

Hardo Berentzen, Ebingen, Wurttemberg, Germany, assignor to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Ebingen, Germany

Filed Dec. 3, 1968, Ser. No. 780,640
Claims priority, application Germany, Dec. 18, 1967, P 16 35 810.4
Int. Cl. D04b *35/04*
U.S. Cl. 66—122 4 Claims



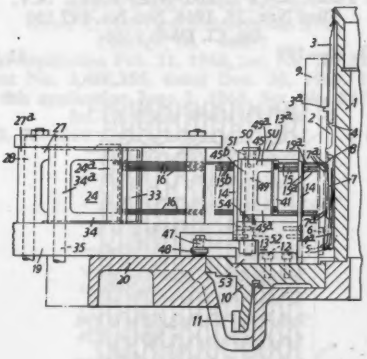
A latch needle for knitting machines having a latch which is pivotally mounted on a bearing pin between two shaft faces. The pin is mounted in two holes located in the shaft faces and is welded to the bearing pin. The welding regions connecting the pin with the shaft faces are located only or principally on the outside surfaces of the shaft faces. The pin is positively pre-located in the holes of the shaft faces.

3,568,473

PATTERNING MECHANISM FOR CIRCULAR KNITTING MACHINES

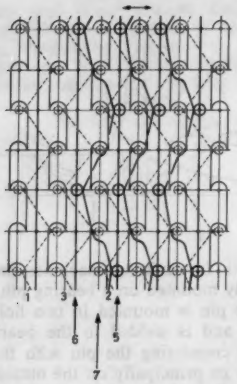
Ernest L. Farmer, Leicester, England, assignor to Wildt Mellor Bromley Limited, Leicester, England

Filed Dec. 12, 1968, Ser. No. 783,268
Claims priority, application Great Britain, Jan. 24, 1968, 3,800/68
Int. Cl. D04b *15/68*
U.S. Cl. 66—154 8 Claims



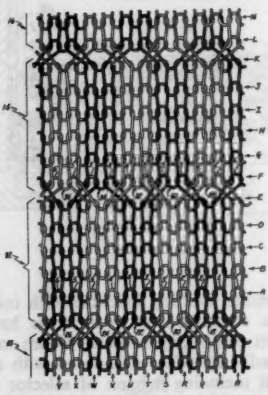
Multi-feed circular knitting machine with individually operable needles controlled by instruments having patterning butts. Butts are in superimposed planes and oblique lines around needle cylinder. Associated with each feed is a selector unit including a bank of selector slides for action on the butts. Slides are actuated selectively at dictates of programmed control media. A cam on the needle cylinder acts on previously selected slides to return same to inoperative positions preparatory to re-selection. To prevent over-propelling of the slides in either direction, they are so frictionally engaged in combs as to be lightly held in positions to which they are moved.

3,568,474
METHOD OF WARP KNITTING A PILE FABRIC
Otto Paul Gottfried Berthold, Bieberstrasse 17, Obertshausen, near Offenbach am Main, Germany
Filed Aug. 19, 1968, Ser. No. 753,481
Claims priority, application Germany, Aug. 17, 1967, P 16 35 862.2
Int. Cl. D04b 23/08
U.S. Cl. 66—193 5 Claims



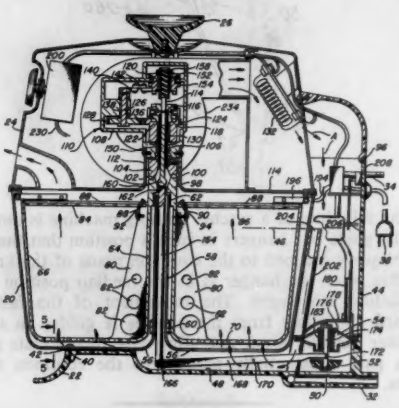
A warp knitted pile fabric is formed on a single set of spring or bearded needles with two or more yarn guides by leaving some of the needles empty and using them for forming loops, but not stitches of the pile yarn. The pile yarn crosses one or more wales of ground fabric stitches between loops and is bound to at least one of the crossed wales by being laid into the stitches of the same without itself forming any stitches.

3,568,475
INSULATING FABRIC
Morris Philip, 2519 Grand Ave., Bronx, N.Y. 10468
Filed Nov. 25, 1966, Ser. No. 597,120
Int. Cl. D04b 9/06
U.S. Cl. 66—199 11 Claims



This invention is directed to an insulating weft knit fabric comprising a plurality of longitudinally extending sections, each of said sections comprising a plurality of courses defining laterally alternating obverse portions and reverse portions, each portion comprising a plurality of wales, the loops of the obverse portion facing one side of the fabric and the loops of the reverse portion facing the other side of the fabric, the obverse portions and the reverse portions of each section being substantially aligned with the reverse portions and the obverse portions, respectively, of the section on either side thereof so as to form insulating cells in said fabric.

3,568,476
CLOTHES WASHING AND DRYING MACHINE
Emery L. Seyler, 100 Edward St., Del Rio Hedges, Del Rio, Tex. 78840
Filed May 19, 1969, Ser. No. 825,773
Int. Cl. D06f 25/00, 33/02
U.S. Cl. 68—12 17 Claims

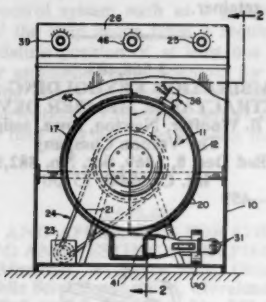


A clothes washing and drying machine particularly adapted for use in washing delicate fabric items, such as ladies' under clothes; said washing machine being small and capable of use or installation in a bathroom area, and comprising novel features including a cover hingedly connected to a tub, wherein an agitator basket is located; said cover housing having drive mechnism for the basket and all located above the water level of the tub, and hydraulic pressure responsive actuating mechanism extending upwardly through a central hollow cylindrical bearing support of the tub and adapted to shift the drive mechanism of the machine which is carried in the cover housing thereof.

3,568,477
DRYCLEANING APPARATUS
Peter R. Dixon, Whittier, and Alden D. Coppock, Hacienda Heights, Calif. (both of 617 W. Olympic Blvd., Montebello, Calif. 90640)
Application Feb. 17, 1969, Ser. No. 799,764, which is a continuation-in-part of application Ser. No. 545,544, Apr. 27, 1966. Divided and this application Oct. 2, 1969, Ser. No. 863,174
Int. Cl. D06l 1/20
U.S. Cl. 68—18 1 Claim

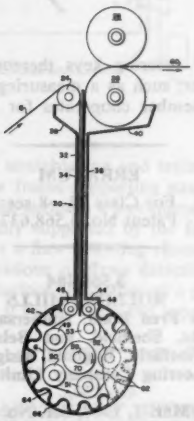
Apparatus for practicing a drycleaning process wherein soiled articles are placed in an air-impermeable chamber together with a quantity of a substantially drycleaning agent, are agitated together with the cleaning agent for a period of time sufficient for cleaning, and, thereafter, the cleaning agent is separated from the cleaned articles; includes a circumferentially perforated cylindrical drum, open at one end and rotatable about a substantially horizontal axis, mounted within a vacuum chamber; means for maintaining the drycleaning agent within the drum

during the cleaning step; a fan having an inlet into the vacuum chamber for evacuating the drycleaning agent



from the drum during the separation step; and, a filter for collecting the evacuated drycleaning agent.

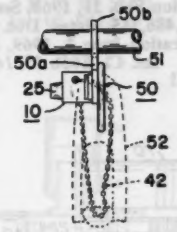
3,568,478
TEXTILE WEB LIQUID TREATMENT APPARATUS
Herman H. Bailey, Belmont, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed Sept. 24, 1968, Ser. No. 771,378
Int. Cl. D06f *17/00*
U.S. Cl. 68—43 **6 Claims**



An orbiting polygonal array of rollers carries a moving textile web as it rotates in a liquid dye-filled pressurized cylindrical chamber. The chamber is lined with axial corrugations, in one embodiment, so that the rollers move alternately close to the near point and then the far point of the corrugations which creates dynamically variant pressure zones of alternatively high and low pressures in the region of the roller, resulting in the dye being forced alternately through the web in accordance with the pressure variation.

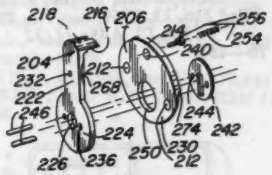
3,568,479
PIN AND TAB LOCKING DEVICE FOR CLOTHING AND THE LIKE
Louis S. Fleck, 136 Lee St., and Thomas H. Spratt, 418 5th Ave., both of Carnegie, Pa. 15106
Filed Nov. 5, 1969, Ser. No. 874,110
Int. Cl. E05b *69/00, 73/02*
U.S. Cl. 70—59 **17 Claims**

A compact locking unit is provided whose housing is adapted to removably-receive a latch pin or key plug and a key tab. The key tab is retained in a locked relation within the housing as long as the key plug is in a removed or outer position, and the latch plug is retained in a locked and coat or other article-retaining position through the agency of a chain connection to the unit as long as the key tab is removed and until it is again inserted in the housing. When the key tab and the key plug are in position in the housing, the key plug may be removed therefrom by pushing-in a spring-pressed manual button. The key tab may be removed when the key plug is in position by merely lifting it out of the housing. It is necessary to use a key tab having requisite aligned openings therethrough corresponding to those in a back operating plate



member for the housing. The latching of the plug is accomplished by means of a reduced diameter portion thereof being engaged by a projecting wing portion of a centrally-disposed operating partition member within the housing. To release the plug, it is necessary to move the wing portion backwardly out of engagement within the reduced diameter portion, and this cannot be accomplished without introducing the key tab in a position such that it, in effect, serves as a position support backing for the partition member, while permitting backwardly-extending pins carried by such operating member to move in alignment with holes in the key tab and the back operating plate member.

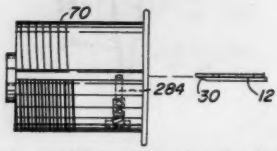
3,568,480
SAFETY KEY AND LOCK
Oliver C. Halfyard, 432 Belmont Ave., Chicago, Ill. 60657
Original application Feb. 21, 1968, Ser. No. 707,189, now Patent No. 3,486,355, dated Dec. 30, 1969. Divided and this application June 2, 1969, Ser. No. 847,764
Int. Cl. E05b *17/04, 27/04*
U.S. Cl. 70—364 **4 Claims**



The disclosure describes a key for use in a cylinder-type lock wherein the key has independent means for actuating a tumbler pin to its unlocked position including a hidden push rod which is manually or automatically moved axially from within the base of the key to accomplish the final disengagement of the cylinder. In one embodiment the auxiliary pin-actuating means is actuated by manual movement through a cammed slot within the handle of the key or a pressure actuated lever moves the push rod into engagement with a locking pin of the

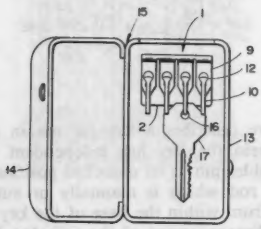
tumbler. In another embodiment the inner tip of the key provides the means for engaging and rotating the locking lug and a separate circumferentially spaced tumbler is provided in the lock cylinder for actuation by the side of the key or for registry with an aperture through the side of the key for positioning to unlocked position. Key and lock combinations including all of the foregoing improvements are described.

3,568,481
SAFETY KEY AND LOCK
Oliver C. Halfyard, 432 Belmont Ave., Chicago, Ill. 60657
Original application Feb. 21, 1968, Ser. No. 707,189, now Patent No. 3,486,355, dated Dec. 30, 1969. Divided and this application June 2, 1969, Ser. No. 847,763
Int. Cl. E05b *15/14*
U.S. Cl. 70—421 **1 Claim**



The disclosure describes a key for use in a cylinder-type lock wherein the key has independent means for actuating a tumbler pin to its unlocked position including a hidden push rod which is manually or automatically moved axially from within the base of the key to accomplish the final disengagement of the cylinder. In one embodiment the auxiliary pin-actuating means is actuated by manual movement through a cammed slot within the handle of the key or a pressure actuated lever moves the push rod into engagement with a locking pin of the tumbler. In another embodiment the inner tip of key provides the means for engaging and rotating the locking lug and a separate circumferentially spaced tumbler is provided in the lock cylinder for actuation by the side of the key or for registry with an aperture through the side of the key for positioning to unlock position. Key and lock combinations including all of the foregoing improvements are described.

3,568,482
KEY RETAINER
Stuart T. Shears, Belmont, Mass., assignor to United-Carr Incorporated, Boston, Mass.
Filed Jan. 23, 1969, Ser. No. 793,380
Int. Cl. A45c *11/32*
U.S. Cl. 70—456 **2 Claims**



A one-piece, synthetic plastic key retainer has a base section and a plurality of key holding loops hinged to the base section. The key holding loops are rotatable both individually and simultaneously about the hinge for movement of one or more keys into and out of a key case housing the retainer.

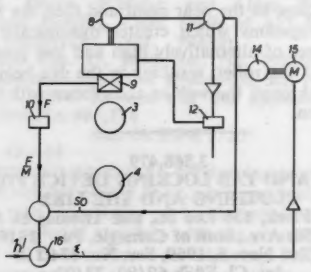
3,568,483
COMBINATION KEYHOLDING AND RETRACTABLE MEMBER DEVICE
Cecil B. Woofter, Newton, Iowa, assignor to The Vernon Company
Filed Dec. 8, 1969, Ser. No. 882,931
Int. Cl. A44b *15/00*
U.S. Cl. 70—459 **6 Claims**

A device for securing keys thereon including a retractable member, such as a measuring tape wherein the key retaining member cooperates for coaction with the tape.

ERRATUM

For Class 72—8 see:
Patent No. 3,568,637

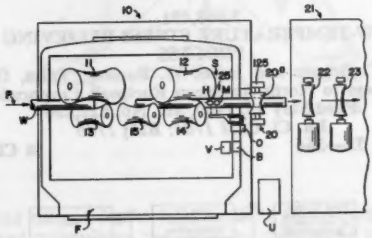
3,568,484
ROLLING MILLS
Harry Laurence Fred Bond, Hathersage, near Sheffield, Dennis Stubbs, Sheffield, and Bela Istvan Bathory, Wales, near Sheffield, England, assignors to Davy and United Engineering Company Limited, Sheffield, England
Filed Mar. 1, 1968, Ser. No. 709,607
Claims priority, application Great Britain, Mar. 2, 1967, 9,977/67
Int. Cl. B21b *37/12*
U.S. Cl. 72—8 **4 Claims**



To adjust the roll gap of a rolling mill hydraulic piston and cylinder assemblies act between the housings of the

mill and the rolls, and each assembly has its own positional control system which is arranged to maintain the piston at a datum position relative to its cylinder and an automatic control system such as a gaugemeter detects departure of the strip gauge from a required value and adjusts the datum position of at least one of the piston and cylinder assemblies to compensate for the variation in gauge. The piston and cylinder assemblies may replace the conventional screwdown screws of the mill or alternatively they may act in series with the screws.

3,568,485
METHOD AND APPARATUS FOR STRAIGHTENING AND TESTING WORKPIECES
Joseph M. Mandula, Jr., Seven Hills, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed Aug. 9, 1968, Ser. No. 751,465
Int. Cl. B21d *3/04*
U.S. Cl. 72—10 **22 Claims**

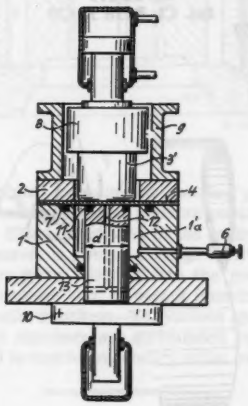


Apparatus for straightening and testing workpieces includes a machine frame supporting straightening rollers. The apparatus also includes a workpiece testing assembly which is removably supported by the frame. The testing assembly includes a flaw detecting element and a marker which marks locations of flaws detected by the sensing element. In the disclosed embodiment a guide roll engages the workpiece as it passes from the apparatus.

3,568,486
PREPARATION OF METAL FOR DEFORMING OPERATIONS
Frederick Rosenberg, Livonia, and Wesley J. Wojtowicz, Detroit, Mich., assignors to H. A. Montgomery Company
Continuation-in-part of application Ser. No. 453,756, May 6, 1965. This application Jan. 31, 1969, Ser. No. 796,944
Int. Cl. B21b *45/02*
U.S. Cl. 72—42 **10 Claims**

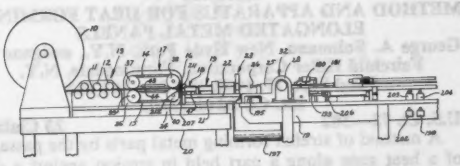
There is provided an improved process and system for the lubrication of the interface between a metal deforming tool and metal being deformed as by cold working, and characterized by a two-coat system including an organic film adhered to a metallic surface and an overlay coating containing a solvent or softening agent capable of developing at the interface between the overlay composition and the resin a mobile system of the resin in the solvent or softening agent.

3,568,487
APPARATUS FOR HYDROMECHANICAL DEEP-DRAWING
Heinrich Riesener, Bruchsal, Germany, assignor to SMG Suddeutsche Maschinenbau-Gesellschaft m.b.H., Wiesental, Bruchsal, Germany
Filed July 12, 1968, Ser. No. 744,554
Claims priority, application Germany, July 15, 1967, P 16 02 556.2
Int. Cl. B21d *26/04*
U.S. Cl. 72—60 **3 Claims**



In a deep-drawing apparatus wherein a metal sheet is forced into a die against water pressure, there is provided a supporting piston the terminal face of which is in contact with an area of said sheet on the underside thereof during the drawing process preventing said area from being exposed to said water pressure for the ultimate purpose of reducing the required ramming force.

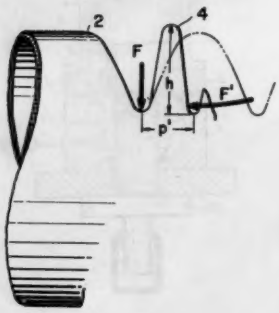
3,568,488
METHOD OF CUTTING AN ELONGATED TUBE AND APPARATUS THEREFOR
Newell A. Franks, Fawn River Township, St. Joseph County, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.
Filed Nov. 25, 1968, Ser. No. 778,611
Int. Cl. B21b *21/00*; B21d *28/00*; B26f *3/00*
U.S. Cl. 72—68 **8 Claims**



A machine having means for guiding and intermittently advancing an elongated, tubular element a predetermined

distance along a path, and for gripping two spaced portions of said element and separating them following each advancement thereof. A cutting device on the machine includes an annular cutting member with a radially inner cutting edge through which the element is slideably received during said advancement thereof. Actuating means effects movement of the cutting member in an eccentric path around the tubular element whereby the cutting operation is performed, after which the severed portion of the tube is bent and ejected from the machine.

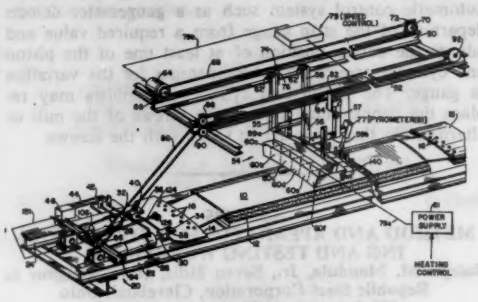
3,568,489
METHODS AND APPARATUS FOR PRODUCING CORRUGATED METAL TUBES
Susumu Tobita, 136 Mitsusawa, Nishi-machi, Japan
Filed Aug. 12, 1968, Ser. No. 752,044
Claims priority, application Japan, Aug. 14, 1967, 42/52,099
Int. Cl. B21d *13/20*
U.S. Cl. 72—77 **8 Claims**



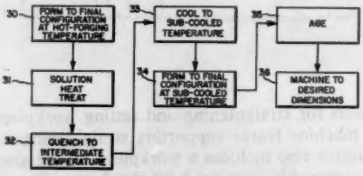
The present invention relates to methods and apparatus for producing corrugations in metallic tubes and is characterized by the fact that it is possible to produce corrugations of various shapes by utilizing at least two corrugating rings or two sets of corrugating rolls. In particular the invention relates to methods and apparatus capable of producing easily corrugations of greater depth as compared with pitch, corrugations of a small pitch whose trough is wider than the crest (tubes with such corrugations have good bending characteristics and other mechanical properties and permit a cable to be pulled into them more easily), and furthermore corrugations conformable to the shapes of apexes of corrugating rings or rolls, without employing any core (corrugating tool to be applied inside the tube) as in the conventional apparatus.

3,568,490
METHOD AND APPARATUS FOR HEAT FORMING ELONGATED METAL PANELS
George A. Bohmann, New Hyde Park, N.Y., assignor to Fairchild Hiller Corporation, Farmingdale, N.Y.
Filed Sept. 27, 1968, Ser. No. 763,163
Int. Cl. B21d *11/02*
U.S. Cl. 72—302 **23 Claims**

A method of stretch forming metal parts by the passage of a heat zone along a part held in tension against a die surface. The ends of the part to be formed are held and a tensile load is applied holding the part in contact with a die surface while a movable heat source traverses the part, locally yielding aid forming it to the die configuration. Elongation of the part is controlled as a function of the position of the heat zone permitting the forming of parts of both uniform and nonuniform cross section.



3,568,491
LOW-TEMPERATURE STRESS-RELIEVING PROCESS
Ralph C. Bruner and James W. Ramsey, Tulsa, Okla., assignors to North American Rockwell Corporation
Filed May 23, 1969, Ser. No. 827,270
Int. Cl. C22f *1/04;* **B21j** *1/06*
U.S. Cl. 72—364 **4 Claims**



A method of manufacturing a stress-relieved aluminum alloy forging using the finish impression cavity of closed die apparatus for both hot-forming and stress-relieving operations and with intermediate processing steps also being involved.

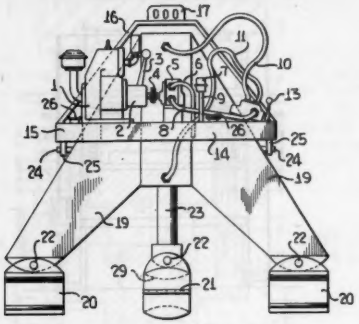
3,568,492
MANUFACTURE OF PRESSURE RESISTANT ARTICLES WITH INTEGRAL HUBS OR FLANGES
Charles H. Moore, R.D. 4, West Chester, Pa. 19380
Filed Nov. 7, 1968, Ser. No. 774,158
Int. Cl. B21j *5/00;* **B21k** *21/00*
U.S. Cl. 72—374 **6 Claims**

Tube-sheets with integral hubs, channel forgings for heat-exchangers, pressure vessels with flat heads and similar articles which are subjected to high-pressure etc. are formed by a series of forging steps which result in greatly improved grain orientation and, accordingly, greater resistance to pressures.

3,568,493
PIPE BENDING APPARATUS
Paul E. Wirt, R.D. 4, Wooster, Ohio 44691; Paul W. Wirt, deceased, late of Wooster, Ohio, by Waneta Maxine Wirt, administratrix
Filed Feb. 5, 1968, Ser. No. 704,213
Int. Cl. B21d *7/00*
U.S. Cl. 72—389 **3 Claims**

Apparatus for precisely bending pipe, ranging from short lengths to substantial lengths in a complete welded

line, in accordance with a desired curvature and in any selected plane from the vertical to the horizontal, wherein a pair of shoes normally lying along the same longitudinal axis and fixedly spaced therealong are pivotally secured to a support member, for holding the pipe while permitting sufficient angular freedom thereof that forces exerted in a direction substantially normal to the pipe axis will produce the desired bend. The forces are exerted by the movement of a fluid-actuated piston, either hydraulic or pneumatic, interposed between the pair of shoes and having a third shoe pivotally secured to the



free end thereof for at least partially encompassing the pipe and transmitting the forces to the wall of the pipe over a sufficiently large area to prevent rupture or buckling.

3,568,494

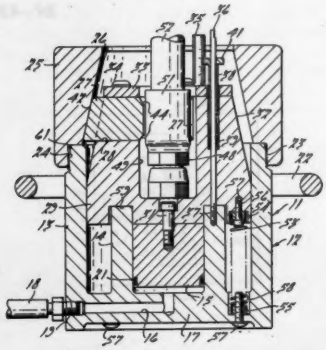
CRIMP MACHINE

James L. Geisman, Van Wert, Ohio, assignor to Aeroquip Corporation, Jackson, Mich.

Filed Aug. 29, 1968, Ser. No. 756,332

Int. Cl. B21d *41/00*

U.S. Cl. 72—402 **4 Claims**



A portable device has radially movable jaws for crimping a hose fitting sleeve to permanently attach a hose end fitting onto an end of a flexible hose.

3,568,495

CRIMPING OR COMPRESSION DEVICE

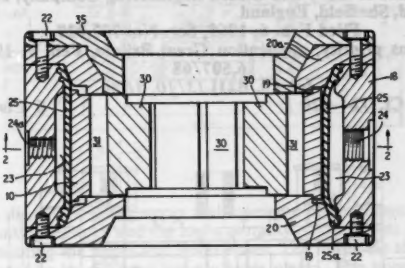
Frederick Russell Duffield and Claude Harcourt Harvey, both of 355 Pacific Highway, Artarmon, New South Wales, Australia

Filed Feb. 12, 1969, Ser. No. 798,727

Claims priority, application Australia, Feb. 19, 1968, 33,826/68

Int. Cl. B21j *9/12*

U.S. Cl. 72—402 **13 Claims**



A fluid operated crimping or swaging press which is adapted for exerting a radial pressure on an article, such as a hose end fitting, positioned in the centre of the press. The radial pressure is exerted through a series of primary collet members upon injection into the press of a pressurized fluid medium and, to permit interchangeability of the primary collet members—for various applications, the primary collet members are surrounded by and are removably fitted to captive secondary collet members.

3,568,496

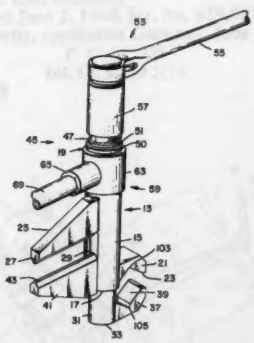
DEFORMABLE TUBE CRIMPING AND REFORMING TOOL

Wallace C. Burke, 911 Melissa St. 90502, and Don P. Thrane, 21009 Ann Rita Ave. 90503, both of Torrance, Calif.

Filed May 1, 1969, Ser. No. 820,857

Int. Cl. B21j *11/00*

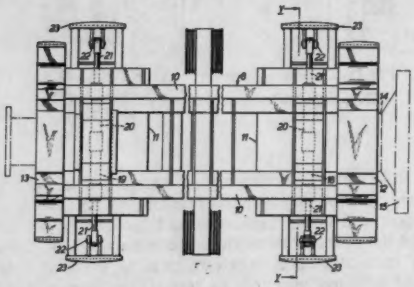
U.S. Cl. 72—404 **7 Claims**



This tool includes a barrel member and a shaft member slidably mounted therein. Each such member has a tube reforming die and a tube crimping jaw extending

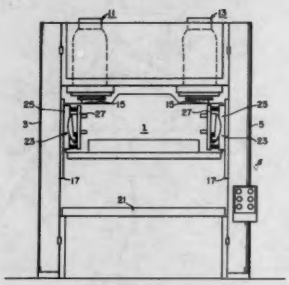
radially outward, with the dies extending in a different direction than the jaws. Associated dies and jaws are held in slidable alignment with each other, while being forced together by commonly coupled closing means, by providing that the shaft carried crimping jaw slidably extends through and is guided by a longitudinal slot in the barrel member wall in the plane of the barrel carried crimping jaw.

3,568,497
MANIPULATORS
William Gordon Wilson, Ecclesall, Sheffield, England, assignor to Davy and United Engineering Company, Limited, Sheffield, England
Filed Feb. 6, 1969, Ser. No. 797,027
Claims priority, application Great Britain, Feb. 9, 1968, 6,507/68
Int. Cl. B21j *13/10, 3/00*
U.S. Cl. 72—420 **6 Claims**



A forging manipulator including a carriage and a peel mounted in a frame which is suspended by links from the carriage so as to permit the frame and the peel to be displaced in a direction transverse to the longitudinal axis of the peel. A piston and cylinder assembly is mounted on the frame and is arranged to act on one side wall of the carriage thereby displacing the frame towards a second side wall of the carriage.

3,568,498
GUIDE SYSTEM FOR RAMS IN PRESS BRAKES AND THE LIKE
Eugene W. Pearson, Orinda, Calif., assignor to Pacific Press & Shear Corp.
Filed Jan. 24, 1969, Ser. No. 793,801
Int. Cl. B21d *11/00*
U.S. Cl. 72—456 **5 Claims**



In a machine of the press brake type, particularly one having a platen type ram, guide means are provided for the ram, which will permit of heavy end forces against the ram slideways without galling, while permitting of hydraulic level control of the ram and limiting permissible longitudinal displacement of the ram to within the mating ability of dies in the machine.

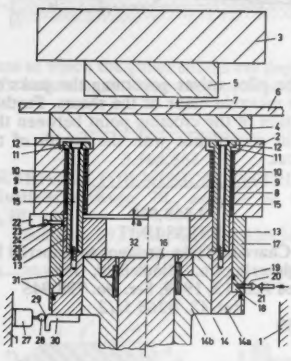
3,568,499 thru 3,568,552

VOID

3,568,553
TOOL SAFETY DEVICE FOR PRESSES

Walter Wanner, and Martin Maurer, Romanshorn, Switzerland, assignors to Hydrel A.G., Romanshorn, Switzerland

Filed Apr. 30, 1969, Ser. No. 820,411
Claims priority, application Switzerland, May 2, 1968, 6529/68
Int. Cl. B26d 7/24
U.S. Cl. 83—58 3 Claims

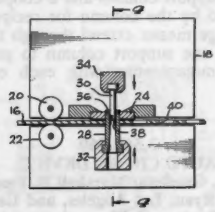


A first limit switch on the press frame and a second on the bottom toolholding table are respectively actuated by a member on the main piston and by one on a sleeve that supports this table. The sleeve and piston together form a compressed air chamber that elastically supports the table above the piston during the earlier part of the working stroke. Excessively thick sheet metal or a foreign object on the sheet forces the table downwards against the air cushion to close the second limit switch prematurely with respect to the first, bringing the piston to an immediate stop.

3,568,554
MAGNETIC CORE FORMING SYSTEM

Walter Wiechec, Dublin, Ireland, assignor to Core Memories Ltd., Dublin, Ireland

Filed Nov. 13, 1967, Ser. No. 682,366
Int. Cl. B26d 7/18
U.S. Cl. 83—98 14 Claims

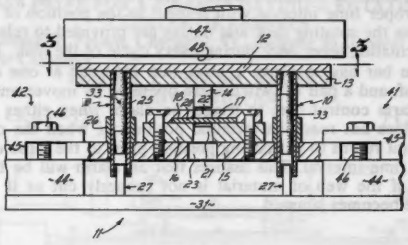


Apparatus and method for producing magnetic cores comprising forming a mixture of magnetic particles and a binder into a sheet, punching a ring-shaped die through the sheet to form a disc, punching a coring die through the disc and into the hole of the ring-shaped die to form a toroid, heating the toroid to remove the binder, and heat-treating the toroid to give it its final magnetic properties.

3,568,555
GUIDEPOST CONSTRUCTION FOR DIE SETS

Werner H. Stroh, Cincinnati, Ohio, assignor to Porter Precision Products Co., Cincinnati, Ohio

Filed Sept. 11, 1968, Ser. No. 758,981
Int. Cl. B26d 7/06
U.S. Cl. 83—146 11 Claims



A die set including upper and lower die shoes respectively mounting a punch and die and a plurality of guideposts interconnecting the upper and lower shoes. The lower die shoe is adapted to be mounted upon a press platen. The upper die shoe carries a backup plate which is adapted to be engaged by the press ram, but is not connected thereto. The upper and lower die shoes are interconnected by a plurality of guidepost assemblies.

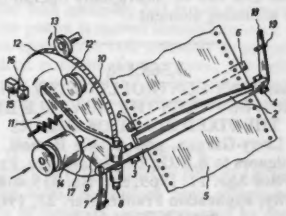
The guidepost assemblies perform three functions, i.e. they maintain the upper and lower die shoes in alignment, they provide a spring force for opening the die, and they provide a stripping force for stripping the work from the punch member. Each guidepost assembly includes a hollow tube mounted on the upper shoe and a bushing mounted on the lower guide shoe which telescopically receives the tube.

A stationary pin extends into the tube and abuts the lower end of a spring, such as a urethane spring member. The urethane spring member is of a configuration smaller than the space in which it is confined when the die is open. Upon closure of the die, the urethane spring member is deformed. When the ram is raised, the urethane member returns to its original shape, forcing the die open and stripping the work from the punch.

3,568,556
SHEARING DEVICE FOR WEB STRIPS

Reinhard Gesell, Schonkirchen Ueber Kiel; Wolfgang Dinse, Altenholz, near Kiel; Klaus Clement, and Manfred Peters, Kiel, Germany, assignors to Dr. Ing. Rudolf Hell, Kommanditgesellschaft, Kiel, Germany

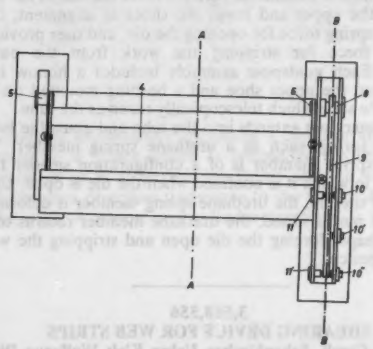
Filed June 2, 1969, Ser. No. 829,507
Claims priority, application Germany, June 4, 1968, P 17 61 538
Int. Cl. B26d 5/16
U.S. Cl. 83—355 9 Claims



A web cutting device and particularly a device for cutting photographic film strips at predetermined intervals as the strip moves through the cutting device. The apparatus includes a stationary shear blade and a rotatable shear blade

which is mounted on a torsion bar. An actuation lever is fixed to the torsion bar and deployed perpendicularly thereof adjacent to the surface of a rotating inertial disk. The actuation lever is pivotable about an axis perpendicular to the axis of the torsion bar, and a solenoid device is used to pivot the actuation lever toward and away from the moving disk. A cam member is mounted on the disk so that it contacts the actuation lever and twists the torsion bar when the actuation lever is moved toward the disk. Switch means are provided to assure that the actuation lever is moved toward the disk at the proper time interval with respect to the position of the cam on the rotating disk and means are provided to release the actuation lever once during every cycle of the disk. The torsion bar has an alarm control cam mounted at one end thereof, and a pair of switches are operated by movement of the alarm control cam to trigger an alarm when either the cam does not reach its terminal position or when the cam does not return to its starting position prior to the lapse of a given time interval. This assures that an alarm will be triggered if the web of material is not properly cut or if the device becomes jammed.

3,568,557
SHEET METAL CUTTING DEVICE
Eduard Hanni, Zofingen, Switzerland, assignor to Haemmerle A. G., Maschinenfabrik, Zofingen, Switzerland
Filed Sept. 26, 1969, Ser. No. 762,777
Claims priority, application Austria, Oct. 4, 1967, A9018/67
Int. Cl. B26d *11/00*
U.S. Cl. 83—519 **2 Claims**

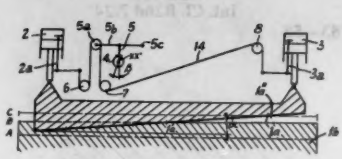


A sheet metal cutting device incorporating a sheet feed table on which a bottom blade and bottom transverse blade are mounted integrally, a top blade borne in a pivotable beam and a transverse top blade mounted perpendicularly to the latter, said transverse blade being mounted about the axis of said beam in a vertical plane perpendicular to the cutting plane of the top blade and being guided at the sides by adjustable guide elements. The transverse top blade is mounted to pivot on a lateral prolongation of the axis of rotation of the beam and the two top blades are pivoted independently of one another and can be individually operated each by its own separate actuating element.

3,568,558
ARRANGEMENT CONTROLLING THE ANGLE OF INCLINATION BETWEEN THE MOVABLE BLADE AND THE FIXED BLADE OF SHEARS
Rene Passa, Livry-Gargan, and Achille Romoli, Saint-Denis, France, assignors to B.R.G., Deuil-La-Barre, France
Filed Apr. 11, 1969, Ser. No. 815,408
Claims priority, application France, Mar. 25, 1969, 6908762
Int. Cl. B26d *5/12*
U.S. Cl. 83—530 **3 Claims**

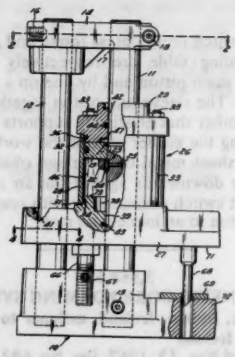
Arrangement controlling the angle of inclination between the movable blade and the fixed blade of shears.

An arrangement controlling the angle of inclination or the rake angle between the movable blade and the fixed blade of hydraulically operated shears in accordance with an indicator defining said angle of inclination for predetermined thicknesses and resistances to shearing of the sheets to be cut. Said knob-controlled indicator controls through a cam and a flexible tape the vertical movements in opposite



directions of the pilot valves governing the jacks operating the ends of the movable blade of the shears. Further means define the location of the crossing point between the blades of the shears in accordance with the length of the sheet material to be cut.

3,568,559
PRESS UNIT
Frank J. Fink, Chardon, Ohio, assignor to Imperial Manufacturing & Engineering Co., Middlefield, Ohio
Filed Feb. 13, 1969, Ser. No. 798,945
Int. Cl. B26d *5/12*
U.S. Cl. 83—639 **6 Claims**

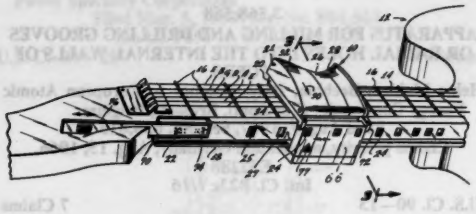


A fluid operated press is disclosed providing two parallel support columns mounted at one end on a base and connected at their other ends by a tie element. A piston is mounted on one support column and a cooperating cylinder assembly is guided by the column for reciprocating movement. Fluid passage means extend through the tie member and axially along one support column to provide separate flow passages communicating with each of the cylinder chambers.

3,568,560
AUTO CHORD DEVICE
Richard S. Chang, Gardena; Marshall B. Pearlman, Los Angeles; John W. Ryan, Los Angeles, and George W. Sioles, Palos Verdes Estates, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 18, 1968, Ser. No. 784,832
Int. Cl. G10d *3/00*; G09b *15/02*
U.S. Cl. 84—317 **11 Claims**

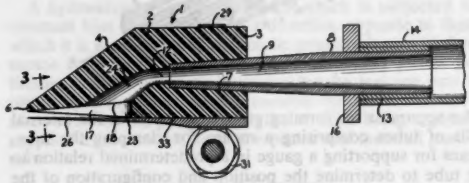
Apparatus for playing chords on a guitar which enables a rapid change between chord positions, including the major, minor, and dominant seventh chords of two keys separated by five half-tones. The apparatus comprises a chording device with levers for changing between the major, minor

and dominant seventh chords of one key. The chording device is shiftable laterally, and it includes cams which alter



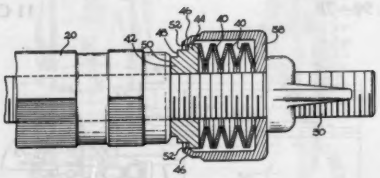
the positions at which the guitar strings are depressed when a lateral shift occurs to establish the corresponding chord in the other key.

3,568,561
MOUTHPIECE FOR MUSICAL INSTRUMENT
Herbert Gutstein, Chicago, Ill., assignor to Eddie Harris, Chicago, Ill.
Filed Apr. 29, 1969, Ser. No. 820,346
Int. Cl. G10d *9/02*
U.S. Cl. 84—383 **1 Claim**



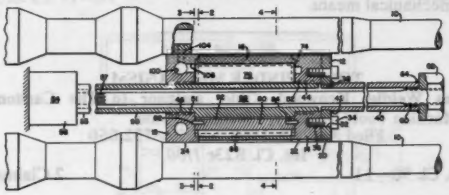
A reed mouthpiece comprises a body with a mouthpipe imbedded therein and projecting from one end thereof and terminating in a fitting for airtight connection to the mouthpiece receiver of a wind instrument. The mouthpipe tapers internally to an air outlet within the body. The body has a shallow tapered tone chamber and a reed is disposed across the lay facing at the vent side of the tone chamber. A throat in the body angles from the chamber and connects at an angle to the air outlet.

3,568,562
CLAMP WITH PREDETERMINED CLAMPING FORCE
Malcolm P. Harwood, Reseda, Calif., assignor to Monogram Industries, Inc., Los Angeles, Calif.
Filed Jan. 10, 1969, Ser. No. 790,414
Int. Cl. B23q *3/06*
U.S. Cl. 85—81 **7 Claims**



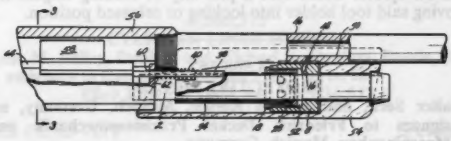
The clamp with predetermined clamping force disclosed herein is provided with first and second opposed wires having hooks thereon for engagement through aligned holes in sheet material intended to be clamped. A tee is extendable relatively to the wires between the wires to engage the hooks at the edges of the holes. The clamp body engages the sheets opposite to the hooks so that the force by which the hooks are pulled into the body is the sheet clamping force. This force is created by stressing springs, and the amount of spring stress or deflection is indicated by the position of the spring housing body with respect to the main clamp body so that when they are moved to a predetermined position, a predetermined amount of clamping force is obtained.

3,568,563
GAS DRIVE FOR A WEAPON HAVING A ROTATING CLUSTER OF BARRELS
Lawrence R. Folson, Charlotte, Vt., assignor to General Electric Company
Filed Jan. 2, 1969, Ser. No. 788,404
Int. Cl. F41d *7/04*
U.S. Cl. 89—126 **7 Claims**



A Gatling-type weapon utilizes gun gas from the barrels to reciprocate a vane motor, which motor biases a spring, and which spring incrementally rotates the cluster of barrels.

3,568,564
SHOTGUN SHORT STROKE GAS SYSTEM
Joseph A. Badali, Branford, Conn., assignor to Olin Corporation
Filed Sept. 30, 1968, Ser. No. 763,566
Int. Cl. F41d *5/04*
U.S. Cl. 89—191 **5 Claims**

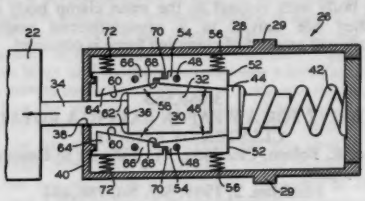


A bolt-actuating gas system comprising an annular gas chamber, and annular piston, and an annular piston sleeve mounted on a tubular magazine wherein the piston sleeve includes a push rod for contacting the bolt assembly. The push rod contacts the bolt assembly but is not connected thereto so that when the piston is moved through its work stroke, the push rod drives against the bolt assembly to propel the latter toward its retired position. Furthermore, the bolt assembly can be manually retracted to its retired position without causing concurrent movement of the piston, sleeve and rod.

3,568,565
BUFFER DEVICE WITH ENERGY DISCHARGE MEANS
Henry P. Swieskowski, Bettendorf, Iowa, Administration the United States of America, as represented by the Secretary of the Army
Filed Nov. 25, 1968, Ser. No. 778,490
Int. Cl. F41d *11/12*
U.S. Cl. 89—198 **8 Claims**

A buffer device for automatic guns resiliently stops a reciprocating bolt in the recoil position, returns a sufficient

portion of the stored energy back to the bolt for return thereof to battery position at a velocity that effects a desired rate of fire, and then discharges the remaining stored energy by mechanical means.

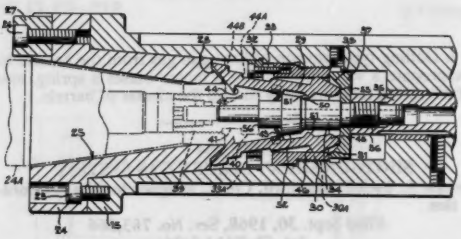


3,568,566

TOOL SPINDLE MECHANISM

Miles Weidig, Kenwood, Ohio, assignor to The Carlton Machine Tool Company, Cincinnati, Ohio

Filed Aug. 12, 1968, Ser. No. 752,050
Int. Cl. B23c *1/00*
U.S. Cl. 90—11 **2 Claims**



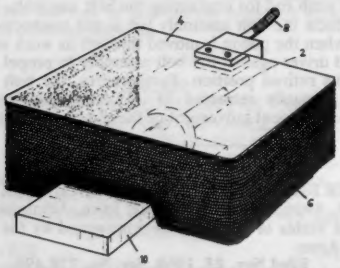
An axially adjustable tool-locking mechanism for automatic machine tools utilizing a draw tube with a locking bar and an ejector collar and a plurality of locking fingers for moving said tool holder into locking or released position.

3,568,567

PROTECTIVE SHIELD

Walter Seck, and Johann Kohler, Munich, Germany, assignors to Friedrich Deckel Prazisionsmechanik und Maschinenbau, Munich, Germany

Filed Oct. 30, 1968, Ser. No. 771,819
Claims priority, application Germany, Nov. 9, 1967, P 16 27 069
Int. Cl. B23c *9/00*; B24b *55/00*
U.S. Cl. 90—11 **12 Claims**



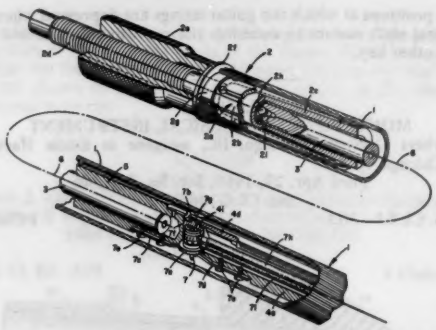
A protective shield for a machine tool is comprised of a curtain made of chain mesh and which hangs downwardly to at least partially surround the machining zone to confine movement of the shavings.

3,568,568

APPARATUS FOR MILLING AND DRILLING GROOVES OR RADIAL HOLES INTO THE INTERNAL WALLS OF TUBES

Heinz Mahler, Brebbia, Italy, assignor to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Aug. 7, 1967, Ser. No. 658,815
Claims priority, application Germany, Aug. 15, 1966, E32288
Int. Cl. B23c *1/16*
U.S. Cl. 90—13 **7 Claims**



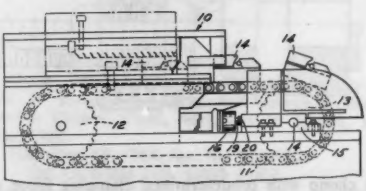
An apparatus for forming grooves or holes in the internal walls of tubes comprising a means for clamping the tube, means for supporting a gauge in a predetermined relation to the tube to determine the position and configuration of the machining to be accomplished, a guide member for insertion into the tube from one end to extend lengthwise of the tube, clamping means for holding the guide member fixed within the tube, and a cutter unit insertable into the tube from the other end thereof. The cutter unit includes a guide follower for cooperation with the guide member to locate the unit radially within the tube. A radially movable cutter having means for rotating the cutter and means operable from outside of the tube to control the radial movement and hence the depth of the cut are also included in the cutter unit. A template follower, engageable with the gauge or template, determines the longitudinal and circumferential position of the cutter within the tube.

3,568,569

DRIVES FOR BROACHING MACHINES AND THE LIKE

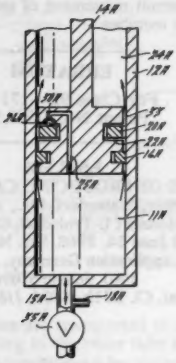
Wilburn K. Haley, Warren, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,571
Int. Cl. B23d *37/06*; B65g *43/02*
U.S. Cl. 90—78 **11 Claims**



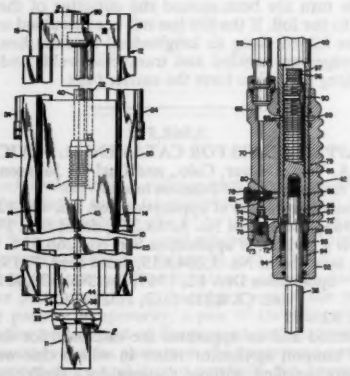
A broaching machine having a chain drive in which the chain is trained over idler sprockets that are yieldingly mounted to tension the chain by means of grease filled cylinders.

3,568,570
ANTICREEP HYDRAULIC POSITIONING SYSTEM
Gordon R. Winders, Lancaster, Ohio, assignor to Diamond Power Specialty Corporation
Filed Mar. 5, 1969, Ser. No. 804,562
Int. Cl. F15b 13/04; F01b 25/04
U.S. Cl. 91—20 8 Claims



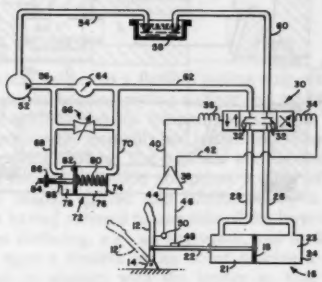
A hydraulically actuatable piston which is subjected to a constant bias (e.g. gravity) in a direction opposite to that in which it is movable under hydraulic pressure is provided with means for accurately maintaining a stationary piston positioning under hydrostatic pressure despite leakage past the piston by a metering valve actuatable by differential movement between the piston and cylinder, fluid being constantly supplied to the underside of the piston and metered past the valve.

3,568,571
POWER HAMMER
Kenneth H. Hoen, Littleton; Walter J. Chapman, Denver, and Robert W. Jones, Englewood, Colo., assignors to Champion Manufacturing, Inc., Denver, Colo.
Original application Nov. 18, 1964, Ser. No. 411,978, now Patent No. 3,408,897. Divided and this application Aug. 5, 1968, Ser. No. 810,857
Int. Cl. F15b 15/22; F01 31/00
U.S. Cl. 91—26 12 Claims



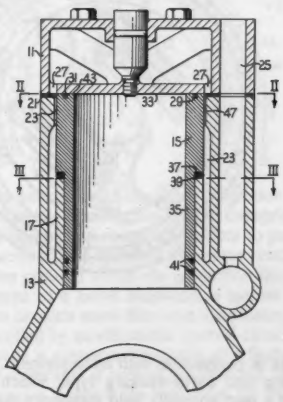
In a hydraulic hammer mechanism, the hammer weight is reciprocated through its working and return strokes by a ram cylinder circuit, the latter being controlled for automatic or manual operation by a hydraulic control circuit. In either automatic or manual position, the length of stroke, speed, power and balance of the ram cylinder may be independently regulated. Moreover the ram cylinder is self-regulating with the necessary built-in safety features to avoid shock or damage to the mechanism or circuitry. Still further, the ram cylinder may be actuated through a power or gravity stroke as desired, and is characterized in that considerably more power and acceleration can be developed in the ram cylinder through each working and return stroke while isolating the cylinder circuit from the hydraulic control circuit.

3,568,572
ENERGY LIMITER FOR HYDRAULIC ACTUATORS
Charles P. Steinmetz, Palo Alto, Calif. Administrationthe United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Mar. 19, 1969, Ser. No. 808,576
Int. Cl. F15b 13/044, 13/16
U.S. Cl. 91—31 4 Claims



The speed imparted to a movable member being hydraulically returned to a null or neutral position is controlled by limiting fluid flow in the hydraulic system by providing at least two parallel fluid flow paths in series with a source of fluid pressure and the hydraulic means that returns the movable member to its null or neutral position. One such parallel fluid flow path provides a constant impedance to fluid flow and another parallel fluid flow path will temporarily provide an additional fluid flow of a low impedance response to fluid pressure exceeding a predetermined level.

3,568,573
CYLINDER LINER SUPPORT
John M. Bailey, Dunlap, and Michael K. Stratton, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 25, 1969, Ser. No. 836,513
Int. Cl. F01j 11/04
U.S. Cl. 92—171 3 Claims



A cylinder liner support utilizing a yieldable or selectively

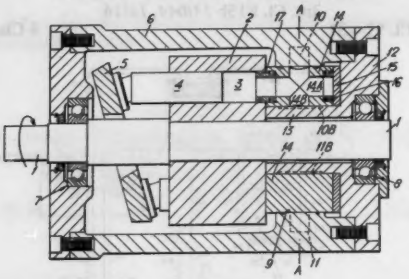
fitted spacer for the liner seat, and a conformable seal ring as the combustion seal.

3,568,574

PUMPS OR MOTORS WITH CIRCULARLY DISPOSED CYLINDERS

Peter John Dupen, Hutton, Essex, England, assignor to Hydrostatic Transmissions Limited, Brentwood, Essex, England

Filed Mar. 21, 1969, Ser. No. 809,152
Claims priority, application Great Britain, Mar. 22, 1968, 14025/68
Int. Cl. F04b *1/02*
U.S. Cl. 91—499 11 Claims



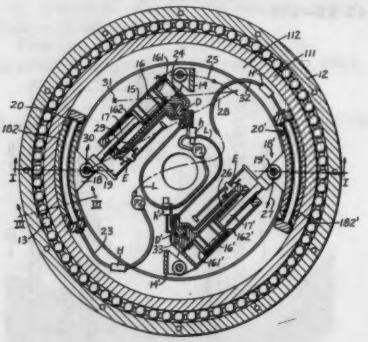
The described invention relates to fluid pressure machines in the nature of pumps or motors in which the working fluid pressure causes radial loads on the bearings of a rotary part. The invention resides in the provision of balancing pressure space to which the working pressure is communicated and of which the effective pressure-exposed areas substantially balance the radial loads otherwise imposed: it is particularly directed to the pressure balancing of a rotary valve.

3,568,575

PRESSURE FLUID OPERABLE EXCAVATING MACHINE

Albert Hagen, Dortmund, Germany, assignor to Eisenwerk Rothe Erde GmbH, Dortmund, Germany

Filed Mar. 19, 1969, Ser. No. 808,550
Claims priority, application Germany, Apr. 8, 1968, P 17 59 191.2
Int. Cl. F01b *15/04*
U.S. Cl. 92—56 7 Claims



For use in connection with an implement, especially of the excavating and earth-working type, which has a rotatable part and a part normally held stationary during the working of the implement, a turntable which includes: a supporting member connectable to a stationary part, a plurality of antifriction bearing means supported by said supporting member along a circular path, a rotatable member forming a platform and being connectable to a rotatable part, fluid operable cylinder piston means having one element thereof pivotally connected to one of said members, rotatable brake or braking means operatively connected to another element of said cylinder piston means and operable selectively to establish a coupling connection of said other element with the other one of said members and to interrupt said brake connection to permit movement of said other element relative to said other member.

ERRATUM

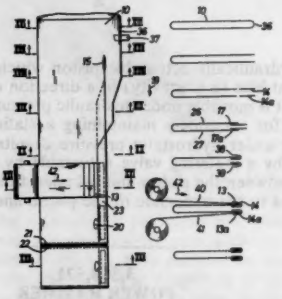
For Class 92—171 see:
Patent No. 3,568,573

3,568,576

METHOD OF PRODUCING CARRIER BAGS

Michael Lehmacher, Unterdorf Str., and Hans Lehmacher, Beckergasse, Mondorf U Troisdorf, Germany

Filed June 24, 1968, Ser. No. 739,559
Claims priority, application Germany, July 1, 1967, July 28, 1967, 56890; 57096
Int. Cl. B31b *49/04, 1/86, 1/18*
U.S. Cl. 93—35 6 Claims



A method of producing a carrier bag from synthetic thermoplastic foil having a reinforcement at the upper edge of the carrier bag and punched grip apertures passing through both walls of the carrier bag. The foil can either be a flat band or in tubular form which is longitudinally slit. Furthermore, reinforcing inserts may be intermittently spaced along the longitudinal edges of the foil. The edges of the foil may then be longitudinally slit so as to form longitudinal strips, which in turn are bent around the cut edge of the foil and welded to the foil. If the foil has not been doubled onto itself, it is then folded along its longitudinal medium line, and the folded edges are welded and transverse welds and cuts are made along the foil to form the carrier bags.

3,568,577

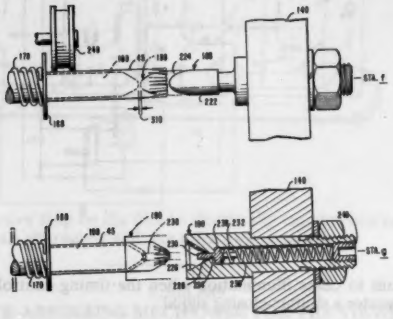
APPLICATORS FOR CATAMENIAL DEVICES

Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis., Assignor to Said Johnson to said Voss

Continuation-in-part of application Ser. No. 464,127, June 15, 1965, now Patent No. 3,358,354, dated Dec. 19, 1967, which is a division of application Ser. No. 266,914, Mar. 21, 1963, now Patent No. 3,204,635, dated Sept. 7, 1965. This application Dec. 12, 1967, Ser. No. 690,001
Int. Cl. B31b *1/32, 1/52, 43/00*
U.S. Cl. 93—77 17 Claims

A method and an apparatus are disclosed for the fabrication of tampon applicator tubes in which thin-walled tube blanks are supplied, without damage, by a feeder mechanism to a tube forming unit which shapes the forward end of each tube, in a sequence of operations including crimping, folding inwardly, exercising to weaken the folds to facilitate ejection of the tampon, and refolding. The tubes are resiliently carried by tube supports mounted on a first, intermittently rotatable turret and are positioned to be acted upon substantially simultaneously by a set of dies carried by a second tur-

ret reciprocably mounted to advance and retract to and from tube engaging positions. Both outer and inner tampon applicator tubes may be formed in this manner by utilizing appropriately shaped tube supports and dies. After shaping the



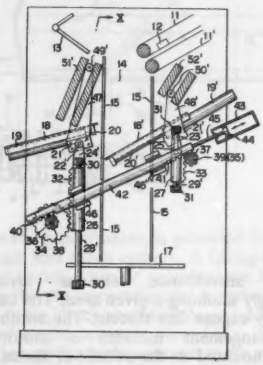
forward ends, the tubes are transported to a machine which applies and bonds a ring to the outer tube near the rear end thereof. Bonding is accomplished by gluing the ring to the outer surface of the tube with a suitable adhesive deposited in drops by an extrusion means.

3,568,578

COUNTER STACKER OF THE ROLLING PRESS

Yuji Fujishiro, 6 of No. 3 Fukazawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed July 10, 1969, Ser. No. 840,738
Int. Cl. B68h *33/00*
U.S. Cl. 93—93 **2 Claims**



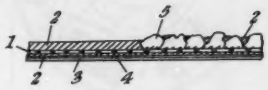
In combination with a rolling press having a passage into which the printed sheets are delivered passing by a counter head, and a turn table which can be turned 180° according to a signal from the counter head whenever a definite number of the printed sheets has delivered and a bundle has been finished an improvement comprising a counter stacker having a bar plate provided at the upper part of the passage to shut the passage temporarily, a pair of receiving plates provided at the middle part of the passage and made alternately to be inserted into the passage at the uppermost position and then lowered down and drawn out from the passage at the lowest position and then raised along the outside of the passage to the uppermost position where it is inserted again into the passage, and means for controlling the motion of the bar plate to shut the passage according to a signal from the counter head whenever a definite number of the printed sheets has been delivered and at the same time for alternating the stacking motion of the receiving plates.

3,568,579

PORTABLE AND FLEXIBLE PAVING STRIPS

Leslie Hoad, 1 Manor Close, Totton, Hampshire, and Stewart C. Cronan, The Homestead, Ashurst Bridge Road, Totton, Southampton, Hampshire, England

Continuation-in-part of application Ser. No. 479,586, Aug. 13, 1965, now abandoned. This application Aug. 11, 1967, Ser. No. 663,194
Int. Cl. E01c *7/00*
U.S. Cl. 94—7 **3 Claims**



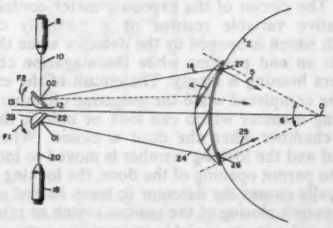
The invention relates to a flexible paving strip which provides a good load-bearing paving surface but which is also particularly well adapted for transportation in the form of rolls which are readily manually laid, either as a temporary or permanent paving surface. The portable and flexible paving strip of the present invention comprises a layer of a bituminous-base binder carried and reinforced by a flexible backing and having adhered to one side of the layer an abrasion-resistant surfacing, e.g., an aggregate, and to the other side of the layer a flexible under cover bearing a layer of release agent in contact with the binder so that the undercover, when required on laying the paving strip, can be clearly separated from binder layer.

3,568,580

PHOTOTYPESETTING MACHINES

Louis M. Moyroud, Medford, Mass. (c/o Photon, Inc., 355 Middlesex Ave., Wilmington, Mass.01887)

Filed Jan. 11, 1968, Ser. No. 697,203
Claims priority, application Great Britain, Jan. 13, 1967, 2065/67
Int. Cl. B41b *21/24*
U.S. Cl. 95—4.5 **4 Claims**

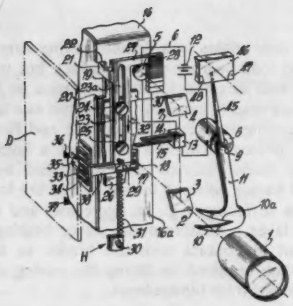


This invention pertains to a character projection system in a photographic type composing machine. It comprises a moving character matrix which causes characters to pass serially through a projection field. As each character reaches its assigned projection position within the projection field it is illuminated by means of a novel illumination system. The illumination system consists more than one illuminating modules which are controlled by an electronic control circuit. Each illuminating module is comprised basically of a flash lamp and a mirror whose deflection is precisely controlled by the electronic control circuit to direct the light from the flash tube to illuminate a character precisely in its assigned projection position.

3,568,581
PHOTOGRAPHIC APPARATUS WITH BUILT-IN EXPOSURE METER

Rolf Heinzmann, Stuttgart-bad, Cannstatt, and Albert Stieringer, Calmbach, Germany, assignors to Robert Bosch Elektronik Und Photokino GmbH, Stuttgart-Unterturkheim, Germany

Filed Sept. 5, 1968, Ser. No. 757,673
Claims priority, application Germany, Sept. 8, 1967, P 15 97 120.7
Int. Cl. G03b *19/04, 19/18*
U.S. Cl. 95—10 11 Claims



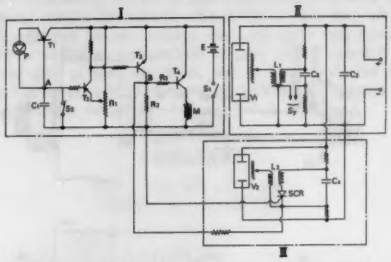
A photographic camera, which utilizes film-containing magazines having coding markers indicative of the film sensitivity, is provided with a built-in exposure meter which is adjusted by a detector serving to scan the coding marker of a magazine in the camera housing and to thereby adjust the exposure meter as a function of sensitivity of the respective film. The circuit of the exposure meter contains a normally operative variable resistor or a normally closed control switch which is opened by the detector when the detector assumes an end position while the magazine chamber of the camera housing is empty. The circuit of the exposure meter can be completed while the magazine chamber is empty by a locking member which can lock or unlock the door of the film chamber when the door is closed. When the door is closed and the locking member is moved to inoperative position to permit opening of the door, the locking member automatically causes the detector to leave its end position and to thus permit closing of the control switch or return movement of the slider in the variable resistor into engagement with the fixed portion of such resistor. This enables the operator to test the exposure meter while the magazine chamber is empty.

3,568,582
ELECTRONIC SHUTTER

Yasuo Uchida, and Hideo Akimoto, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sept. 10, 1968, Ser. No. 758,920
Claims priority, application Japan, Sept. 27, 1967, 42/62101
Int. Cl. G03b *9/62, 9/70*
U.S. Cl. 95—11.5 6 Claims

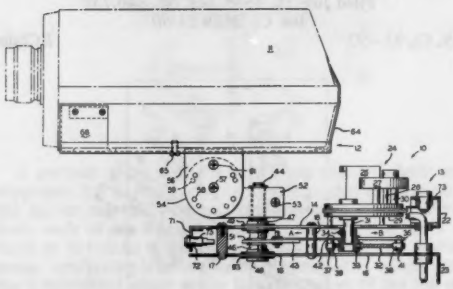
An electronic shutter comprising a time control circuit for maintaining the shutter open for a variable period of time inversely related to the intensity of the light reflected from the subject and sensed at the camera, a flash discharge circuit which initiates illumination upon opening of the shutter, and a flash control circuit operative to cause said flash discharge circuit to cease illumination when the timing control circuit generates a shutter-closing signal.



3,568,583
SURVEILLANCE CAMERA DEVICE AND CONTROLS THEREFOR

Charles Horberg, Jr., 2980 Lake Placid Lane, Northbrook; Jere J. Willing, and Abe Shulman, 2139 W. Farewell Ave., Chicago, Ill.

Filed May 13, 1968, Ser. No. 728,405
Int. Cl. G03b *37/02*
U.S. Cl. 95—15 14 Claims



Antitheft surveillance camera arrangement for reciprocatingly scanning a given area. The camera is able to automatically expose film therein. The antitheft surveillance camera arrangement includes a motorized scanning mechanism mounted on the outside of the camera case. The motor continuously operates in one direction. The outside mounting enables the motor mechanism to be more readily accessible for servicing and reduces the inertia of the reciprocating camera case.

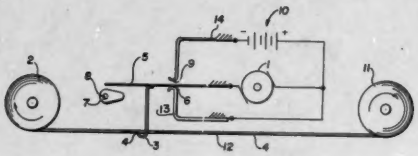
3,568,584
FILM ADVANCE BRAKING SYSTEM

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1968, Ser. No. 754,794
Int. Cl. G03b *1/14, 19/04;* B65h *25/00*
U.S. Cl. 95—31 8 Claims

In a camera provided with an electric motor for advancing film; switching means for sequentially connecting the motor first with a source of potential to advance the film, and then with a shunt to dynamically brake the film-advancing mechanism in response to detection of a code indicia on the film. The switching means can comprise a two-way switch with a common terminal actuatable from one switching position to the other by a sensor that detects perforations in the

film. According to an alternative embodiment, the switch means comprises three sliding contacts adapted to engage a



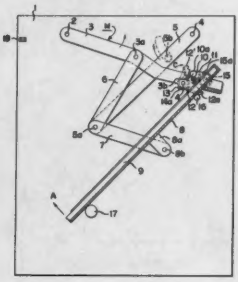
conductive strip on the film to electrically connect one of the terminals alternately with the other two terminals.

3,568,585

SHOCK-ABSORBING MECHANISM FOR THE VIEWING MIRROR OF A SINGLE LENS REFLEX CAMERA

Sunao Ishizaka, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed July 10, 1968, Ser. No. 743,884
Claims priority, application Japan, July 18, 1967, 42/45813
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **5 Claims**



A shock-absorbing mechanism is provided for the viewing mirror of a single lens reflex camera. A spring-biased shock-absorbing lever having a pin or protuberance in the path of the mirror absorbs the impact forces. A spring-biased latch cooperation with the shock-absorbing lever latching the lever immediately before the mirror is moved into its raised position. The viewing mirror is thus moved to its raised position without impact.

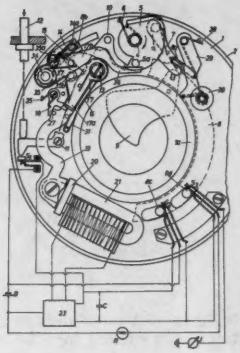
3,568,586

PHOTOGRAPHIC SHUTTER WITH RECIPROCATING SECTORS AND ELECTRONIC EXPOSURE TIMING DEVICE

Waldemar T. Rentschler, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach/Black Forest, Germany

Filed July 16, 1968, Ser. No. 745,229
Claims priority, application Germany, July 21, 1967, P 42645
Int. Cl. G03b *9/58, 9/62*
U.S. Cl. 95—53 **6 Claims**

A device for obtaining constancy in the movement of a photographic shutter at even the shortest exposure time having a spring mechanism located between the magnet armature and the member locking the blade driving part. The spring mechanism is releasable by the magnet armature to actuate the member locking the blade driving part. The spring mechanism is so formed that the time interval from the beginning of the actuation of the member locking the blade driving part to its disengagement from the blade driving part is substantially independent of the member locking the blade driving part, and approaches a zero value.

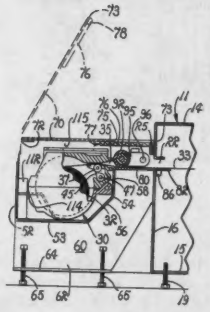


3,568,587

PHOTOGRAPHIC PAPER FEEDING ATTACHMENT FOR PROCESSOR

Jerome D. Laval, 491 W. Escalon, Fresno, Calif.

Filed July 26, 1968, Ser. No. 748,003
Int. Cl. G03d *1/14*
U.S. Cl. 95—90.5 **5 Claims**



An attachment for feeding exposed photographic paper from a cassette loaded with such paper to an automatic processor providing a light-impervious housing adapted to receive such a cassette and precisely to locate it in paper-feeding position with respect to the processor and paper drive components within the housing manipulatable externally thereof initially to feed the paper into the processor without further exposing the paper during such travel.

3,568,588

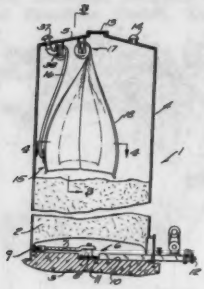
RETRACTABLE VARIABLE CAPACITY BREATHER SYSTEM

Allen A. Kudeck, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Mar. 20, 1969, Ser. No. 808,733
Int. Cl. A01f *25/08*
U.S. Cl. 99—235 **12 Claims**

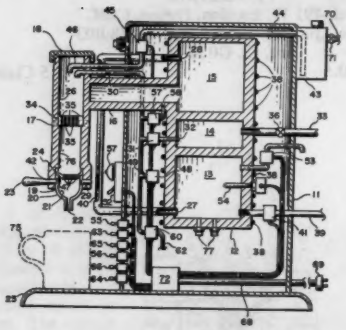
An upright sealed storage structure has within it a breather system including an expandible-contractible, bag which is in-

ternally exposed to the ambient pressure. The system also includes a reel upon which the bag can be coiled. The bag folds



to a flattened shape when contracted and can then be raised to the top of the structure by winding over the reel.

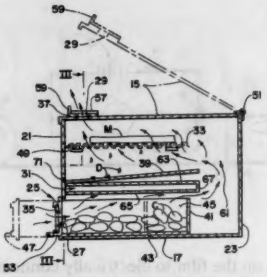
3,568,589
COFFEE BREWING APPARATUS
Romarico Robau, 4378 W. Flagler St., Miami, Fla.
Filed July 24, 1969, Ser. No. 844,485
Int. Cl. A47j *31/00*
U.S. Cl. 99—283 **3 Claims**



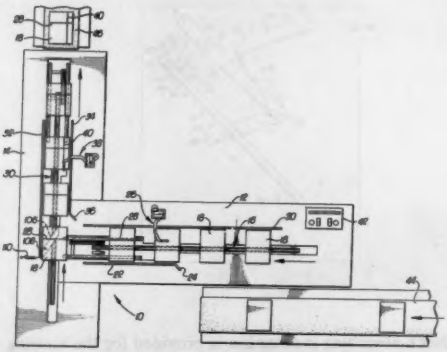
An improved coffee brewing apparatus having a three compartmented tank with the middle compartment containing coffee brewing water while the outer compartments contain hot water to maintain the coffee brewing water heated with heating elements utilized for heating all of the water. A brewing chamber connected to the coffee brewing water compartment and to a liquid sugar container having a homogenizing member at its midportion to spray sweetened water under pressure onto granules of coffee contained in a coffee retaining member whereby Cuban coffee of uniform quality and consistency is produced automatically.

3,568,590
COOKING STOVE
James L. Grice, 825 Parkrose Ave., Memphis, Tenn.
Filed Mar. 6, 1969, Ser. No. 804,787
Int. Cl. A47j *27/00*
U.S. Cl. 99—446 **11 Claims**

A cooking stove including firebox structure adapted to contain charcoal or like fuel and including horizontal baffle means arranged directly over the firebox and including horizontal grill-like food rack structure arranged directly over the baffle structure. The arrangement being operative for causing combustion heat and gases of the burning charcoal fuel to flow rearwardly underneath the baffle structure and then forwardly and upwardly superjacently of the baffle structure and through the grill-like food rack. The food supported on the rack is arranged in the flow of combustion gases and is not subjected to radiant heat from the fuel.



3,568,591
AUTOMATIC TYING APPARATUS
Clifford E. Dunlap, Pasadena, Calif., assignor to Ambassador College, Pasadena, Calif.
Continuation-in-part of application Ser. No. 766,875, Oct. 11, 1968, now abandoned. This application Jan. 10, 1969, Ser. No. 790,286
Int. Cl. B65b *13/18*
U.S. Cl. 100—4 **19 Claims**

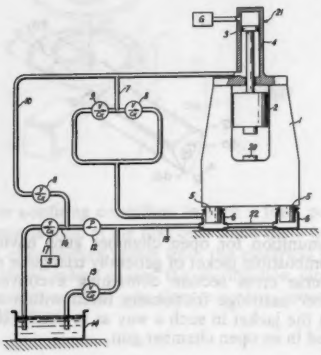


A conveyor system for automatically tying a series of bundles, such as stacks of magazines, while they are in continuous, uninterrupted movement. Movement of each bundle causes its leading edge to engage string suspended across its path and double the string back above and below the bundle to its trailing edge, where knotting mechanism knots and cuts the string while the bundle continues to move. Actuation of the knotting mechanism is accurately synchronized to each bundle for tight tying by actuation of the knotting mechanism through rapid-acting drive means energized by microswitch means actuated according to bundle position on the conveyor.

3,568,592
POWER HAMMER
Pavel Harvanek, Zdar nad Sazavou, Czechoslovakia, assignor to Vyzkumny ustav tvarecich stroju a technologie tvareni, Brno, Czechoslovakia
Filed Mar. 17, 1969, Ser. No. 807,624
Claims priority, application Czechoslovakia, Mar. 18, 1968, 2063/68
Int. Cl. B30b *1/32*
U.S. Cl. 100—269 **5 Claims**

In a power hammer wherein work located on an anvil is acted upon by a ram located over the anvil an upper piston-

and-cylinder means coacts with the ram to lower the latter along a driving stroke by way of a gaseous fluid under pressure and to raise the ram back to its starting position along its return stroke by way of a hydraulic fluid under pressure. A frame means which carries the anvil also carries part of this upper piston-and-cylinder means, while another part thereof is operatively connected with the ram. Beneath the frame means the foundation carries part of a lower piston-and-cylinder means which is operatively connected with the



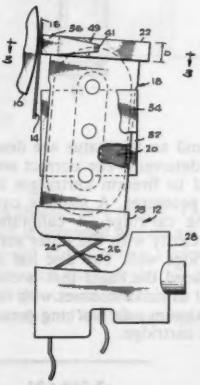
frame means for raising and lowering the latter. A conduit provides communication between the hydraulic fluid of the upper piston-and-cylinder means and the lower piston-and-cylinder means. A control valve is provided in the conduit to open the latter so that when the gas drives the ram downwardly the hydraulic fluid under pressure will flow through the conduit from the upper piston-and-cylinder means into the lower piston-and-cylinder means to raise the frame means, and the anvil therewith, simultaneously with the downward movement of the ram.

3,568,593

HAMMER FOR IMPACT PRINTING DEVICE

Stelios B. Papadopoulos, Los Angeles, Calif., assignor to Data Products Corporation, Culver City, Calif.

Filed Nov. 6, 1968, Ser. No. 773,911
Int. Cl. B41j 9/00
U.S. Cl. 101—93 **8 Claims**



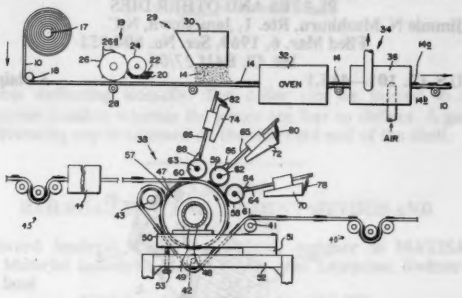
A hammer assembly useful in printing apparatus, for impacting against a character drum. The hammer is constructed to withstand abusive operation as for example, when no paper or ribbon covers the drum. The assembly comprises a hammer tip which is joined to the rest of the hammer assembly by an easily compressed buffer material such as an elastomer.

3,568,594

ROTARY PRINTER FOR APPLYING A PATTERN TO A FLOCKED SHEET

John H. Johnston, and John H. Johnston, Jr., Somerset, Mass., assignors to Dabit Inc., Fall River, Mass.

Filed Jan. 24, 1968, Ser. No. 700,243
Int. Cl. B41f 9/02
U.S. Cl. 101—152 **11 Claims**



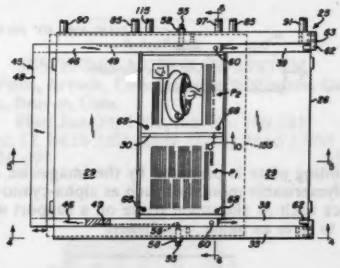
A colored pattern is applied exclusively to the raised nap of a flocked sheet by feeding the sheet over a drum roll spaced from one or more engraved rolls. Takeup and letoff units maintain the sheet in a highly tensioned condition on the drum, yet the units are balanced so that they impart no net motion to the sheet. The drum roll is then rotated independently of the units to advance the sheet under substantially constant tension at all speeds from very slow to very fast. The pattern to be applied to the nap is in the form of dye-filled recesses etched into the surfaces of the engraved rolls. The drum roll is critically spaced from the engraved rolls so that the nap fibers in register with these recesses extend into them and are thereby immersed in the dye contained therein. Substantially no pressure is applied to these fibers to be colored so that they are uniformly colored by a combined dipping and wicking action at all sheet speeds.

3,568,595

APPARATUS FOR MAKING LETTERPRESS PLATES

Charles W. Bunting; David P. Groeber, Dayton, and Louis W. Pettlo, Springboro, Ohio, assignors to McCall Corporation, New York, N.Y.

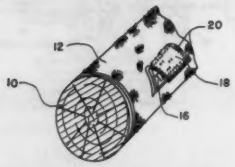
Filed Aug. 28, 1967, Ser. No. 663,858
Int. Cl. B41n 1/10
U.S. Cl. 101—401.1 **6 Claims**



A hydraulic press supporting a lower press member including a center and end sections each having an internal passageway and with an engraved master plate mounted on the center section, an automatically controlled system for circulating cooling fluid through the passageways in the end sections and alternately circulating cooling and heating fluid through the passageway in the center section for preheating and cooling the plates, a thermoplastic sheet of material pressed against the preheated plate by an upper press member having a resilient blanket and held until the plate

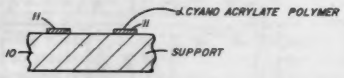
and sheet are cooled, and a frame slidably mounted on the lower press member for shifting the sheet a predetermined distance to form a flexible mat having a pair of identical impressions in precise registration for use in producing a two-on plate for a letterpress.

3,568,596
RELEASABLE ATTACHING MEANS FOR PRINTING PLATES AND OTHER DIES
Jimmie N. Mashburn, Rte. 1, Jamestown, N.C.
Filed Mar. 6, 1969, Ser. No. 804,952
Int. Cl. B41f 27/06
U.S. Cl. 101—415.1 **3 Claims**



This invention relates to the printing, scoring, perforating and creasing of corrugated cardboard boxes and other flat sheet material in presses, and more particularly to a means for releasably holding the printing and other types of dies formed of rubber, synthetics, wood and metal to the upper, revolving cylinder, wherein the interface between the cylinder and a die comprises minute hooks on one surface and minute loops on the other, preferably of the material commonly known as Velcro or a similar material. Such an arrangement permits the die to be more easily positioned and pressed onto the cylinder and removed.

3,568,597
LITHOGRAPHIC PRINTING PLATE AND PROCESS
Henry C. Staehle, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 3, 1967, Ser. No. 651,003
Int. Cl. B41m 1/005/00; B41n 3/00
U.S. Cl. 101—450 **13 Claims**

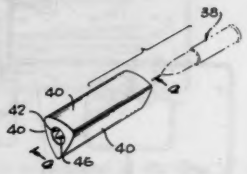


A printing plate is prepared by the imagewise application of a polymerizable monomer such as alpha-cyano acrylate to a surface such as aluminum oxide on a support such as aluminum to form an image in polymer.

3,568,598
PROCESS OF AND COMPOSITION FOR RENDERING HYDROPHILIC AN IMAGE AREA ON A LITHOGRAPHIC PRINTING PLATE
Thomas I. Abbott, and Donald A. Smith, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 24, 1966, Ser. No. 588,707
Int. Cl. B41n 1/00, 3/00; G03f 7/02
U.S. Cl. 101—465 **19 Claims**

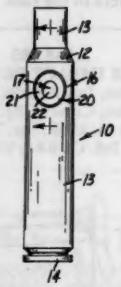
The image areas of a lithographic printing plate are rendered hydrophilic by being coated with a solution comprising a specified basic organic polymer, a cationic surfactant and an organic gelatin solvent.

3,568,599
AMMUNITION IMPROVEMENTS TO PERMIT FIRING OF A CONVENTIONAL CLOSED CHAMBER CARTRIDGE IN AN OPEN CHAMBER BREECH MECHANISM
David Dardick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Sept. 1, 1967, Ser. No. 665,160
Int. Cl. F42b 9/00, 5/26
U.S. Cl. 102—38 **2 Claims**



Ammunition for open chamber guns having a yieldable noncombustible jacket of generally triangular round shape in transverse cross section containing a conventional closed chamber cartridge frictionally fitted within a central bore within the jacket in such a way as to permit the cartridge to be fired in an open chamber gun.

3,568,600
METHOD AND APPARATUS FOR CHECKING FIRING PRESSURE OF AMMUNITION
John A. Nosler, Bend, Oreg., assignor to Robert Amos Nosler, Gales Ferry, Conn.
Filed Aug. 8, 1968, Ser. No. 751,286
Int. Cl. F42b 9/28
U.S. Cl. 102—43 **9 Claims**

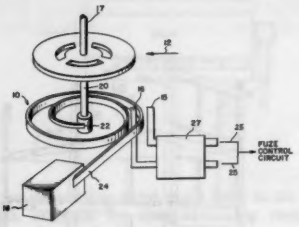


A method and an apparatus are described for enabling a sportsman to determine the correct amount of powder that he should add to firearm cartridges to produce maximum safe working pressures. A shallow cavity is formed in the sidewall of the cartridge. A calibrated thin metal disc is seated in the cavity with the outer surface of the disc flush with the cartridge wall. The disc has a recessed center section with reduced thickness that is calibrated to deform or bulge outward to make contact with the firing chamber wall when the maximum safe working pressure is exerted on the interior of the cartridge.

3,568,601
MINE FUSE SAFING SYSTEM
Warren P. Morrow, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed July 26, 1968, Ser. No. 747,881
Int. Cl. F42c 15/10
U.S. Cl. 102—70.2 **4 Claims**

The regulator of a fuze timing clock includes an electrical switch, which utilizes the breathing action of a balance wheel

hairspring and a single or double stator contact. The switch produces a series of timing pulses which are dependent upon the number of stator contacts used and the period of the breathing action of the hairspring. In a fuze, the pulses can operate a self-sterilization circuit which will place the fuze in

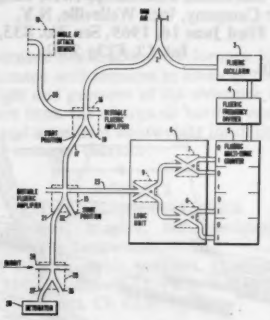


an unarmed or nonfiring condition. In such a fuze, power is fed to the output section of the fuze only when there is a continuous series of sustaining pulses from the electrical switch. Cessation of these pulses causes the sterilization circuit to turn off the output section gate thus removing power from the output of the fuze.

3,568,602
FLUERIC ARMING DEVICE

Raymond W. Warren, McLean, Va., Assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 24, 1968, Ser. No. 770,185
Int. Cl. F42c *15/28*
U.S. Cl. 102—81 **6 Claims**



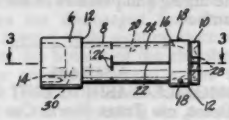
A device for arming an explosive missile. Fluid pressure for operation of the device is provided by ram air, which drives a flueric oscillator. A count of the output cycles of the oscillator determines the distance through the air that the missile has travelled. When the count reaches a predetermined point, unless other conditions inhibit arming, a detonator is armed.

3,568,603
AIR RIFLE SHOT SHELL

Edwin S. Vartanian, North Haven, Conn., assignor to Olin Mathieson Chemical Corporation

Filed May 7, 1969, Ser. No. 822,458
Int. Cl. F42b *7/06*
U.S. Cl. 102—91 **14 Claims**

A caseless plastic shot shell having a shot-receiving pocket formed on the forward end thereof, the sidewall of the pocket being interrupted by spaced apart slits defining laterally deflectable petals. A collar is slidably mounted on the shell and operative in a first position to prevent the petals

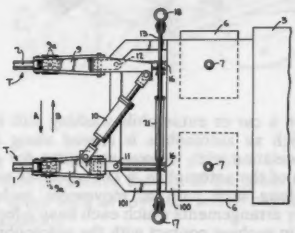


from deflecting laterally. The collar can be moved to a second position wherein the petals are free to deflect. A gas obturating cup is disposed on the rearward end of the shell.

3,568,604
RAILROAD TRACK ALIGNMENT METHOD AND APPARATUS

Gerard Sauterel, Pully, Switzerland, assignor to MATISA Material Industriel S.A., Crissier pres Lausanne, Switzerland

Filed Jan. 15, 1968, Ser. No. 697,978
Claims priority, application Switzerland, Jan. 20, 1967, 885/67
Int. Cl. E01b *33/02, 35/08*
U.S. Cl. 104—8 **7 Claims**

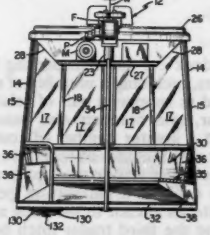


A method and apparatus for the alignment of a railroad track wherein there is carried out a leveling operation and a slewing operation which is incorporated in the tamping cycles for the tamping of the ballast. Upon completion of a tamping cycle the leveling operation is terminated, but the lateral track position is fixedly maintained for a predetermined period of time after completion of such leveling operation.

3,568,605
SUSPENDED MONORAIL SYSTEM

Frank P. Pettit, Arvada, Colo., assignor to Projects General of America, Denver, Colo.

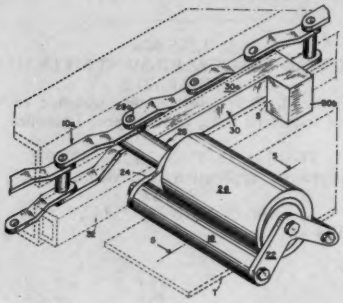
Filed Jan. 24, 1968, Ser. No. 700,211
Int. Cl. B61b *3/02;* **B61c** *13/04;* **B61d** *17/04*
U.S. Cl. 104—95 **25 Claims**



In a monorail system a lightweight vehicle is designed for suspension from an overhead rail by drive units extending up-

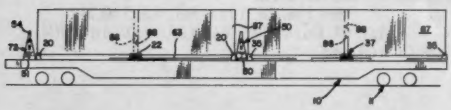
wardly from a longitudinal beam which defines the main support for the entire vehicle structure, and the drive units are characterized in particular by having drive wheels pivotally mounted to swing upwardly under running engagement with the rail from a line normal to the running surface of the rail, to increase the urging and pressure of the drive wheel against the running surface.

3,568,606
AUTOMOBILE-WASHING UNIT CONVEYOR
Howard E. Grant, c/o Trans World Car Wash Systems, Inc 65 Marine St, Farmingdale, N.Y.
Filed Dec. 23, 1968, Ser. No. 786,276
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 **8 Claims**



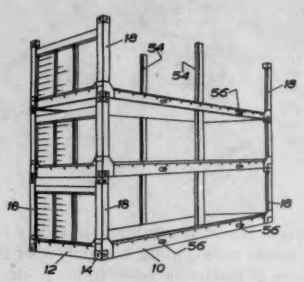
For use in a car or automobile-washing unit in the operation of which an automobile is moved along a prescribed path in association with various apparatus for cleaning different parts of the automobile, a conveyor for urging the automobile along such path of movement including chain-driven roller arrangements which each have a freely rotatable idler roller in pushing contact with the automobile wheel and thus permits unimpeded rotation of the automobile wheel during movement of the automobile along the path of movement.

3,568,607
RAILROAD FLAT CAR FOR TRANSPORTING CONTAINERS AND HIGHWAY TRAILERS
Jack E. Gutridge, Dyer, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 6, 1968, Ser. No. 750,735
Int. Cl. B61d *45/00;* **B65j** *1/22*
U.S. Cl. 105—368 **4 Claims**



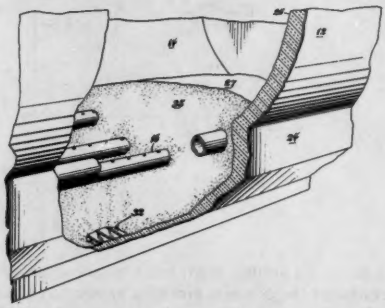
A railroad flat deck car for transporting both containers and highway trailers, including a plurality of sets of container brackets positioned to support a pair of relatively large containers on said car, said brackets also being movable into position to support a greater number of containers of lesser size. The flat deck also includes at least three trailer hitches, one of said hitches being stationary, another being movable lengthwise on the deck to a plurality of positions whereby both said trailer hitches anchor to the deck a pair of relatively long trailers, and the third trailer hitch being of the conventional collapsible type which, in the erect position, and with the other two hitches, supports a plurality of trailers of lesser length on said deck.

3,568,608
APPARATUS FOR TRANSPORT OF GOODS
Cyril Taylor, 12, Tristan Ave., Walmer Bridge, Lancashire, and Theodore Howe, 17, Hey Houses Lane, St. Annes, Lancashire, England
Filed Aug. 12, 1968, Ser. No. 751,820
Int. Cl. B65d *19/18*
U.S. Cl. 108—53 **3 Claims**



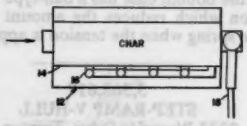
A goods stacking platform comprises a base frame having a post upstanding from each corner, and a laterally projecting foot rigid with the lower end of each post having a fixed axis pivot connection to the base frame located to one side of the post providing for movement of the post between an erect upstanding position to a collapsed folded position substantially flatly overlying said base frame. Axially slidable offset locking pins distinct from the pivots are mounted on said base frame for displacement into corresponding apertures in the lower ends of said posts when the posts are erect.

3,568,609
INCINERATION SYSTEM
Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed June 16, 1969, Ser. No. 833,514
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 **4 Claims**



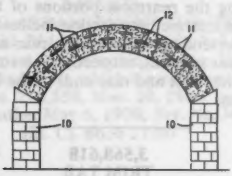
An incinerator having an arrangement of ash removal that permits continuous operation without the necessity of opening the combustion chamber thereof directly to the atmosphere so as to provide an uncontrolled supply of air for combustion thereto. A layer of sand is placed on the bottom of a combustion chamber to cover the ash removal door to a depth that provides a labyrinth-type seal to preclude the flow of air from the atmosphere into the combustion chamber. As combustion within the combustion chamber occurs, ash resulting therefrom accumulates at the top of the sand, and an amount of sand is withdrawn from the bottom of said chamber so that the amount of particulate matter at the bottom thereof remains substantially unchanged.

3,568,610
METHOD AND APPARATUS FOR CONVERTING GRAIN HULLS TO ASH
Dwight Hughes, 301 Elliot St. Apt 21, Woodland, Calif.
Filed June 5, 1969, Ser. No. 830,764
Int. Cl. F23g 7/00
U.S. Cl. 110—18 7 Claims



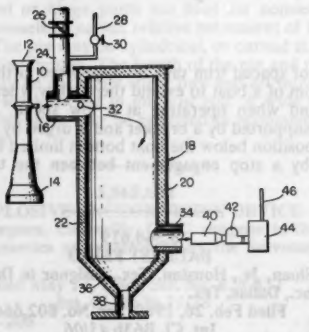
A method for converting dried grain hulls to an essentially carbonless ash material by first removing moisture and volatile gases to form char in an enclosed converter using heat and then burning the char at a controlled rate in an enclosure to remove carbon and form the ash.

3,568,611
FURNACE CONSTRUCTION
Howard E. Konrad, Somerville, N.J., and August Pocius, Westport, Conn., assignors to Johns-Manville Corporation, New York, N.Y.
Filed Nov. 12, 1968, Ser. No. 774,977
Int. Cl. F23m 5/06
U.S. Cl. 110—99 13 Claims



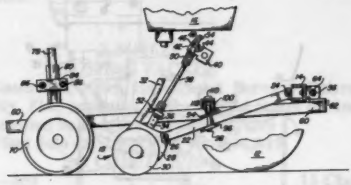
Improved furnace construction for furnace tops, arches or crowns and furnace wall sections in areas of the furnace not subject to weight and pressure of the structure itself or abrasion and impact from the charge or burden and washing action of melts, and a resilient lightweight insulating and refractory composite material therefor.

3,568,612
COMBUSTION CHAMBER
Kenneth W. Stookey, Markle, Ind., assignor to Torrax Systems, Inc., North Tonawanda, N.Y.
Filed Feb. 19, 1969, Ser. No. 800,684, Continuation-in-part of Ser. No. 719,300, March 25, 1968, Patent No. 3,511,194.
Int. Cl. F23b 5/04
U.S. Cl. 110—28 19 Claims



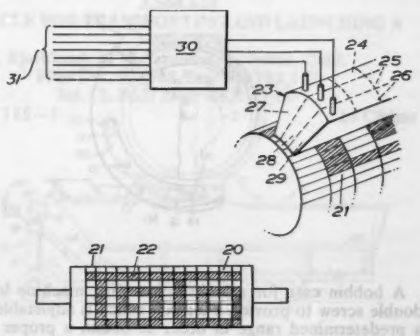
Apparatus for the complete and controlled combustion of combustible materials, particularly gases and combustible distillates produced by incomplete combustion and distillation products of various classes of carbonaceous fuels, waste materials, and the like. The apparatus comprises a generally vertical chamber into which the material is introduced at the top and is admixed with air. The material moves downwardly during combustion thereof and the products of combustion which are gaseous are discharged from the side of the chamber near the bottom while solid products of combustion are withdrawn from the bottom of the chamber. There may, advantageously, be provided a vessel at the bottom of the chamber to receive the solid products of combustion and this vessel includes valves for controlling the passage of material therethrough so that the chamber can be operated at subatmospheric pressure. At the top, the chamber is always at subatmospheric pressure, and the material to be burned is drawn into the chamber by suction.

3,568,613
PRESS AND GAUGE WHEEL ATTACHMENT FOR GRAIN DRILL
Gerald W. Lange, Lamberton, Minn.
Filed May 31, 1968, Ser. No. 733,625
Int. Cl. A01c 5/06; A01b 63/16, 63/24
U.S. Cl. 111—86 4 Claims



A gauge wheel attachment is provided for a wheel-type grain drill thus permitting the use of the grain drill as a seed planter for crops such as soybeans which require planting to a controlled depth.

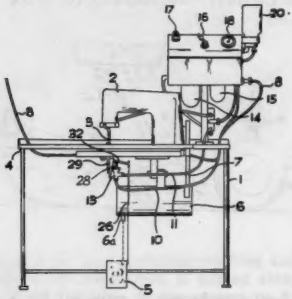
3,568,614
MACHINE PATTERN FOR A TEXTILE TUFTING MACHINE
Stanley Shorrock, and Norman Ian Buckley, Blackburn, England, Said Buckley assignor to said Sharrock
Filed Sept. 26, 1968, Ser. No. 762,961
Claims priority, application Great Britain, Sept. 26, 1967, 47876/67
Int. Cl. D05c 15/26
U.S. Cl. 112—79 12 Claims



A textile tufting machine is controlled by a pattern produced by applying a grid to an artist's pattern equal to the

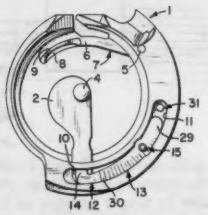
number of tufts in the pattern then making a binary coded machine pattern gridded corresponding to the colors of the artist's pattern when gridded, sensing and decoding the machine pattern and thereby controlling the tufting machine needles accordingly. The pattern itself has a number of unit areas consisting of a number of rows and columns of binary coded information with the columns equal to the number of needles in the tufting machine and the rows equal to the number of needle strokes in a pattern.

3,568,615
METHOD AND APPARATUS FOR APPLYING FABRIC LUBRICANT IN A SEWING MACHINE
Kenneth W. Stretton, Kirkby-in-Ashfield, England, assignor to Wood, Bastow & Company Limited
Filed Dec. 26, 1968, Ser. No. 786,961
Claims priority, application Great Britain, Dec. 30, 1967, 59287/67
Int. Cl. D05b *67/00, 71/04*
U.S. Cl. 112—218 **15 Claims**



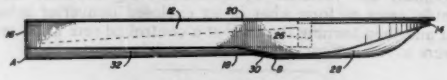
In a sewing machine, a method and an apparatus wherein an atomized stream of a fabric lubricant is continuously supplied under pressure to either a nozzle to spray a jet of lubricant onto the fabric or a separate reservoir. A valve device switches the stream between the nozzle and the reservoir such that a pressurized stream is readily available as a jet at the nozzle when needed.

3,568,616
BOBBIN CASE FOR SEWING MACHINES
Lionel J. Coulombe, Matawan, N.J., assignor to The Singer Company, New York, N.Y.
Filed Oct. 2, 1969, Ser. No. 863,103
Int. Cl. D05b *57/14*
U.S. Cl. 112—229 **8 Claims**



A bobbin case for a lockstitch sewing machine having a double screw to provide a tension which is adjustable within a predetermined range in order to obtain a proper bobbin thread tension for a desired stitch. The double screw comprises a sealed inner member which is factory adjusted to exert the highest tension of the range, and an outer member which is adjusted by a sewing machine operator to relieve the pressure applied by the inner screw member. A stop rivet engages the outer screw member at a particular position to establish the lowest tension of the range. The double screw acts upon a leaf spring which bears against the bobbin holddown arm to provide a tension resisting withdrawal of the thread wrapped on the bobbin. A double tension leaf spring is used to eliminate overstressing. A screw used to position the spring on the bobbin case has a ball-type head to permit a rocking motion which reduces the amount of deflecting or bending of the spring when the tension is applied.

3,568,617
STEP-RAMP V-HULL
John V. Yost, 2233 Riverside Drive, Trenton, Mich.
Filed Mar. 11, 1969, Ser. No. 806,146
Int. Cl. B63b *1/20*
U.S. Cl. 114—66.5 **7 Claims**



A boat hull construction provided with longitudinally extending bottom surfaces including (1) a forward section extending generally horizontally forward from generally amidships and curving forwardly and upwardly at its forward end, (2) a generally horizontally disposed rear section spaced rearwardly of the forward section and above a horizontal plane containing the rearmost portions of the forward section, and (3) an intermediate section inclined rearwardly and upwardly and extending between the rear and front ends of the front and rear sections, respectively, a step of low vertical height joining the front and rear ends of the intermediate and forward sections.

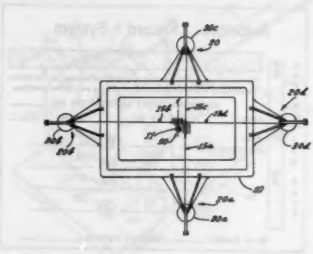
3,568,618
TRIM TAB
William A. Bedford, Jr., Sarasota, Fla., assignor to Graham P. Olson, Sarasota, Fla.
Filed Apr. 29, 1969, Ser. No. 820,240
Int. Cl. B63b *1/22*
U.S. Cl. 114—66.5 **7 Claims**

A pair of spaced trim tabs are supported at the bottom of the transom of a boat to extend therebelow when the boat is at rest and when operating at a low speed. Each tab is pivotally supported by a bracket and is urged by a spring to a lowered position below the boat bottom limited to an angular position by a stop engagement between the tabs and the brackets.

3,568,619
BALLAST FLUID
John P. Sloan, Jr., Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Feb. 26, 1969, Ser. No. 802,666
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **4 Claims**

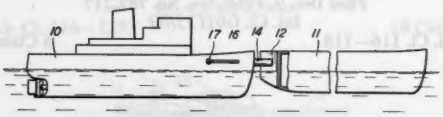
Waterborne vessels are ballasted using water containing dissolved metal salts such as potassium carbonate.

3,568,620
ROLL AND PITCH SUPPRESSOR FOR FLOATING MARINE STRUCTURES
Donald W. Douglas, 4 Crest Road East, Rolling Hills, Calif.
Continuation-in-part of application Ser. No. 693,238, Dec. 26, 1967, now abandoned. This application Feb. 26, 1969, Ser. No. 807,479
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **24 Claims**



A roll and/or pitch suppressor for floating marine structures is disclosed in which pairs of buckets are suspended from outriggers symmetrically arranged in relation to a roll or pitch axis. The buckets of a pair fill during down stroke and empty during up stroke in phase opposition to provide roll or pitch suppressing or damping momentum.

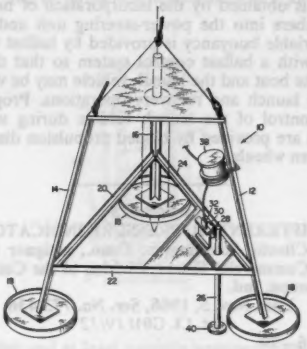
3,568,621
COUPLING ARRANGEMENT FOR VESSELS
Masasuke Kawasaki, 714 Florida Ave, Slidell, La.
Continuation-in-part of application Ser. No. 784,511, Nov. 19, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 714,558, Mar. 20, 1968, now abandoned. This application May 6, 1970, Ser. No. 34,271
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 **36 Claims**



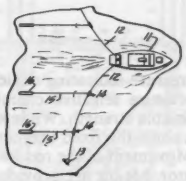
A tugboat engages the stern of a barge using a linkage which permits freedom of movement between the two vessels for pitching, rolling, and/or heaving motions, but yet permits the tug to push and steer the barge. A large pin protruding from the bow of the tug extends into a vertical slot in the stern of the barge, the pin and slot being along or parallel to the centerlines of the vessels. Rigid struts connect the tug to the barge, these being positioned at angles with respect to the vessels. Swivel or hinge joints are used for connecting the struts to the vessels to permit relative movement of the struts and vessels. The pin may be cylindrical, or curved at its sides, to permit rolling motion. The length of the pin and the depth of the slot may be such that slight fore-and-aft movement is permitted as would occur in pitch or roll. A wide recess in the stern of the barge may be provided to accommodate the bow of the tug.

3,568,622
EXPLOSIVE ANCHOR FIRING DEVICE
John R. Thompson, Camarillo, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed May 14, 1969, Ser. No. 824,532
Int. Cl. B63b *21/28*
U.S. Cl. 114—206 **5 Claims**

An anchor construction wherein an explosive charge propels anchor members into the ocean floor. It includes means for firing the charges a predetermined period of time after the device has reached the ocean floor, such means operating without the use of any command link between the anchor and the surface and being capable of postponement if the anchor construction is lifted from the floor before the charge is ignited.

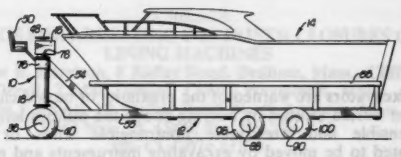


3,568,623
TOWING TACKLE
Robert H. Gustavson, Lynn Haven, and Bernard Deleman, Panama City, Fla., assignors to the United States of America as represented by the Secretary of the Navy
Filed July 25, 1969, Ser. No. 844,819
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 **11 Claims**



This invention provides an improved piece of towing tackle especially useful in marine towing applications. A slotted skirt device is fitted over the tow line and a hinged wedge stop is clamped about the line and inserted in a recess in the slotted skirt to secure the latter to the tow line. The skirt carries a rotating bearing collar with a towing bail attached thereto.

3,568,624
VEHICLE FOR TRANSPORTING AND LAUNCHING A BOAT
Floyd E. Bjorklund, 2218 Corona Ave., Norco, Calif.
Filed Dec. 9, 1968, Ser. No. 782,117
Int. Cl. B63f *3/00*; **B63c** *15/00*
U.S. Cl. 115—1 **14 Claims**



A vehicle for transporting, launching and recovering a boat which said vehicle comprises a power-steering unit attached to a boat trailer having variable buoyancy. The power-steer-

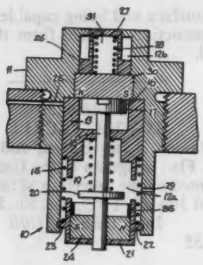
ing unit includes a power source which is coupled to driven wheels in such a manner that the driven wheels are steerable by rotation of the power source housing. A fixed level of buoyancy is obtained by the incorporation of hollow structural members into the power-steering unit and the trailer frame. Variable buoyancy is provided by ballast tanks in association with a ballast control system so that the pressure between the boat and the launch vehicle may be varied to expedite the launch and recovery operations. Propulsion and steering control of the launch vehicle during water borne operations are provided by bladed propulsion discs attached to the driven wheels.

3,568,625

DIFFERENTIAL PRESSURE INDICATOR

Guido D. Cilento, Southington, Conn., assignor to Fairfield Facility Commercial Filters, Division of the Carborumdum Co., Lebanon, Ind.

Filed Nov. 5, 1968, Ser. No. 773,436
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **7 Claims**



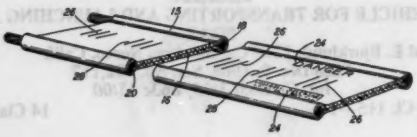
A differential pressure-indicating device has an indicating chamber and a pressure sensitive chamber separated by a fixed magnet of variable strength. While a rod in the pressure sensitive chamber abuts the fixed magnet, the indicator cannot be triggered. Movement of the rod away from the magnet triggers the indicator. Means are provided to prevent return of the rod to abut the fixed magnet until the filter is replaced.

3,568,626

IDENTIFYING MEANS FOR BURIED UTILITIES

Hamilton Southworth, Jr., New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 8, 1967, Ser. No. 681,355
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **3 Claims**



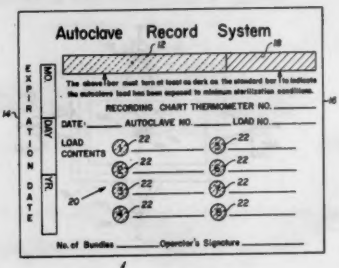
Excavators are warned of the proximity of buried cables or other buried utilities by burying above the utilities lengths of extensible and stretchable nonfrangible wires or tapes located to be moved by excavating instruments and marked to indicate the existence of the utilities. Preferably, the wires or tapes include magnetic or radioactive portions which can be sensed above ground prior to excavation to locate and identify utilities.

3,568,627

COMBINED RECORD CARD AND STERILIZATION INDICATOR

Irwin Selinger, Flushing, and Michael Feingold, Bronx, N.Y. (c/o Surgicot, Inc. 12 N. Cottage St., Valley Stream, N.Y. 11586)

Filed Dec. 24, 1969, Ser. No. 887,937
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **6 Claims**



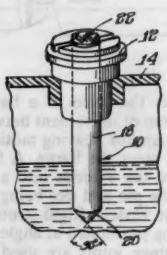
A combined record card and sterilization indicator for use in a sterilizer or autoclave having a sterilization indicator device thereon. A comparison standard may be positioned on the card which is of a material that is unaffected by heat to which the indicator changes in color for comparison with the standard. The card is of such size and shape as to enable its placement strategically within a sterilizer or autoclave and has indices to identify the articles subject to sterilization conditions.

3,568,628

LIQUID LEVEL INDICATOR

Lloyd Arthur Erickson, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 9, 1968, Ser. No. 782,217
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 **6 Claims**

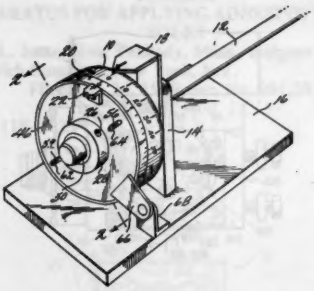


This invention relates generally to level indicators for indicating levels of liquid subject to fluctuation and more particularly to level indicators of the type comprising a light transmitting member having an upper section provided with a light receiving surface. The embodiment of the invention disclosed herein contemplates a section depending from the above-mentioned upper section into a body of liquid subject to fluctuation within a container, as for example a storage battery. Indicia means of fractional thickness are associated with the above-mentioned light receiving surface and are of a color which is compatible with the shading to which the depending section or portion of the indicator may be subjected when immersed within the liquid of a complementary container. Also, this fractional thickness of indicia material is covered by a thin layer of protective material which is optically compatible with the material from which the indicator is produced.

3,568,629
ECCENTRIC GEARING MEANS

Herbert B. Porter, Montgomery County, Md. (6618 Westmoreland Ave., Takoma Park, Md., 20012)

Filed July 24, 1968, Ser. No. 747,299
Int. Cl. B23q 17/00
U.S. Cl. 116—124 6 Claims

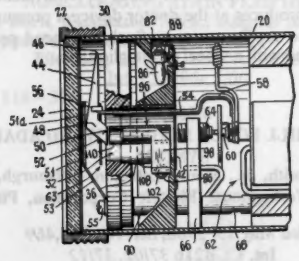


A coarse dial for use with a milling machine or the like is disclosed, said dial indicating the distance the table is moved on the machine. In the preferred embodiment, a special gearing arrangement is provided for disposing the coarse dial immediately adjacent a vernier dial which typically is already incorporated in the machine. The special gearing arrangement includes an eccentrically mounted internal gear, at least one tooth of which engages at least one slot of a plurality of slots disposed on an inner peripheral surface provided on the coarse dial. A universal joint is provided to prevent the internal gear from rotating while at the same time permitting it to follow an eccentric motion.

3,568,630
ILLUMINATED INDICATOR MEANS AND INSTRUMENT

Dana J. Blackwell, Naugatuck, Conn., assignor to The Lewis Engineering Company, Naugatuck, Conn.

Filed Feb. 26, 1969, Ser. No. 802,485
Int. Cl. G09f 9/00
U.S. Cl. 116—129 10 Claims



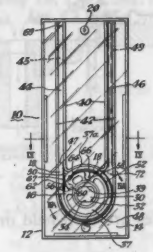
An electrical instrument movement having miniature incandescent lamps which illuminate the instrument dial and pointer, the lamps being removable and replaceable without requiring removal of the dial, mask or pointer. The lamps are carried in clearance openings in a reflector ring disposed behind the dial, and are mounted for removal in lateral directions away from the axis of the instrument.

3,568,631
INDICATOR MECHANISM

Harvey G. Skinner, Ligonier, Pa., assignor to Westmoreland Plastics Inc., Latrobe, Pa.

Filed May 2, 1969, Ser. No. 827,465
Int. Cl. G09f 5/00
U.S. Cl. 116—135 16 Claims

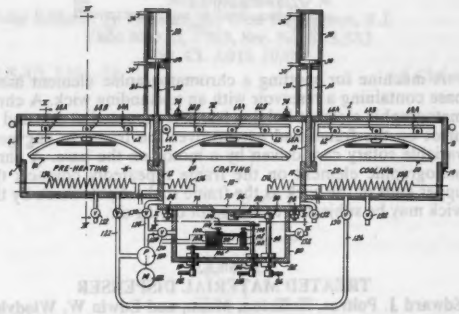
I disclose an indicating mechanism comprising a support means on said support for defining an indicator path means and a drive member recess, said path means communicating with said recess, a drive member rotatably mounted within said recess, and an elongated flexible indicator joined to said drive member and at least partially wrapped thereabout, said indicator extending from said recess into and along said path means.



3,568,632
LENS COATING APPARATUS

Gary F. Cawthon, 1033 Billard St., Topeka, Kans.

Filed Mar. 24, 1969, Ser. No. 809,576
Int. Cl. C23c 13/08
U.S. Cl. 118—49 8 Claims



A lens coating apparatus consisting of a housing and means for producing a vacuum therein, said housing being divided into three chambers through which a lens-carrying holder may be passed in sequence, first a chamber in which the lenses are preheated and a vacuum formed to drive off occluded gases therefrom, second a coating chamber in which the lenses are coated by metallic vapors emanating from an incandescent source, and third a cooling chamber in which the lenses are gradually cooled, and a system of valves whereby lenses may be inserted in or removed from the preheating or cooling chambers, or advanced from one chamber to the next, without disturbing the vacuum in any other chamber.

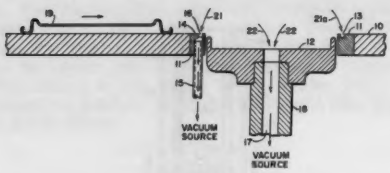
3,568,633
DEVICE FOR ARRESTING CONTAINER CLOSURES ON LINING MACHINES

William B. Harrison, 8 Ridley Road, Dedham, Mass.; Clifford F. Tirrell, 2 Mac Dongall Court, Weymouth, Mass., and James J. Rosati, 10 Walker Road, North Andover, Mass.

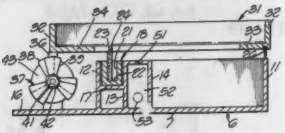
Filed Nov. 18, 1968, Ser. No. 776,721
Int. Cl. G07c 13/00
U.S. Cl. 118—50 2 Claims

Closures and small parts being fed to a rotary chuck where a gasketing compound is applied are arrested from overrunning the chuck by a curtain of air which closely surrounds the chuck periphery. Forward momentum is checked as the

closure is pushed through the air wall onto the chuck. Full arrest occurs as the leading edge of the closure meets the opposite air wall. Closures are then held on the chuck by differential air pressure.

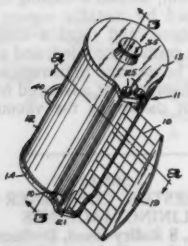


3,568,634
MACHINE FOR SPOTTING A CHROMATOGRAPHIC ELEMENT
Carl B. Mankinen, 803 Linden Lane, Davis, Calif.
Filed July 7, 1969, Ser. No. 839,552
Int. Cl. B05c *1/00*
U.S. Cl. 118—58 **9 Claims**



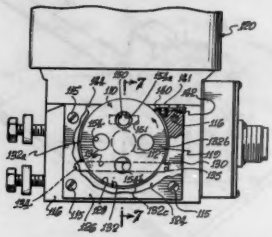
A machine for spotting a chromatographic element has a base containing a reservoir with an upstanding wick. A chromatographic element holding frame is mounted at one end to pivot on the frame and extend over the frame to engage a variable rotary cam driven by a motor on the base. A chromatographic element on the frame repeatedly contacts the upper ends of the wick as the frame rocks. Spots made by the wick may be subjected to a blast of drying air.

3,568,635
TREATED MATERIAL DISPENSER
Edward J. Poitras, Holliston, Mass., and Edwin W. Wlodyka, Ashland, Mass., assignors to Highland Labortories, Ashland, Mass.
Filed Sept. 29, 1967, Ser. No. 671,846
Int. Cl. B05c *11/02*
U.S. Cl. 118—122 **10 Claims**



A portable container for dispensing a fluid-saturated web material between engaging compressible rollers and through an elongated exit slit. The rollers remove excess fluid from the web interstices to provide a withdrawn fluid-saturated web of high porosity.

3,568,636
HOT MELT APPLICATOR SYSTEM
Glynn H. Lockwood, Carmel Valley, Calif., assignor to Lockwood Technical, Inc., Sand City (Seaside), Monterey County, Calif.
Filed May 15, 1968, Ser. No. 729,309
Int. Cl. B05c *1/08*
U.S. Cl. 118—259 **10 Claims**



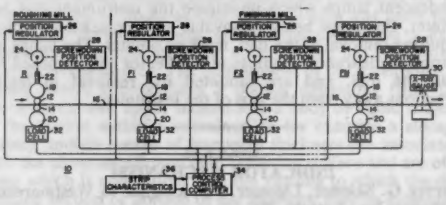
A liquid such as hot melt adhesive is supplied at a controlled superatmospheric pressure to the wheel chamber of a wheel-type applicator. The wheel chamber is so formed that liquid can overflow only by passing through a narrow annular channel between the working face of the wheel where it enters the chamber and an opposing chamber wall. Wheel rotation produces shearing action in the liquid in that channel, raising the pressure in the main body of the chamber. As the channel fills, that shear pressure exceeds the controlled supply pressure, positively preventing overflow during wheel rotation.

The controlled supply pressure may be obtained by passing the liquid through an accumulator in which a controlled pressure is maintained by a pressure regulating valve, that pressure being automatically relieved when the wheel stops.

Alternatively, liquid may be supplied to the wheel chamber via two valves that are driven with the wheel to open alternately, thus terminating supply in absence of wheel rotation.

Another aspect of the invention provides a narrow annular channel at the wheel surface between the liquid inlet to the wheel chamber and the doctor blade or equivalent. Wheel rotation then produces at the doctor device a pressure that is higher than the supply pressure. Such enhanced pressure is especially useful with a wheel of intaglio type.

3,568,637
TANDEM MILL FORCE FEED FORWARD ADAPTIVE SYSTEM
Andrew W. Smith, Jr., Mount Lebanon, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 13, 1968, Ser. No. 728,469
Int. Cl. B21b *37/02, 37/12*
U.S. Cl. 72—8 **18 Claims**



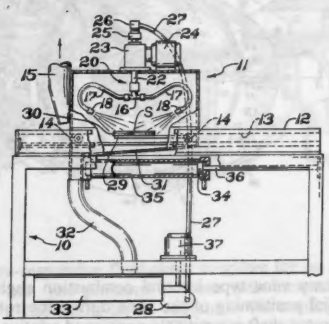
A feed forward screwdown control system is provided for use in a computer-controlled rolling mill to improve mill setup for subsequent workpieces as well as for the piece

being rolled. Ratio comparisons are made between the measured force and the predicted force in each stand while a piece is being rolled which together with the ratios determined from the previous rolled workpiece will provide information for causing an on-gauge product for the present workpiece.

3,568,638
APPARATUS FOR APPLYING ADHESIVE TO SHOE SOLES

George L. Isaac, West Peabody, Mass., assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,281
Int. Cl. B05c *5/00, 11/16*
U.S. Cl. 118—323 5 Claims

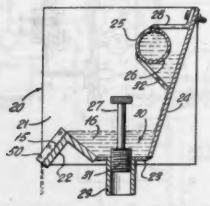


A spray apparatus which applies liquid adhesive onto a molded outsole by a pair of spaced rotating nozzles that are supported on a common reciprocable carriage. The carriage reciprocates to a position over the outsole as the nozzle rotates to spray the adhesive to the upper surface and the sides of the outsole.

3,568,639
NONCLOGGING STAIN FEED HEAD

Keith E. Burk, Kalamazoo, Mich., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Aug. 5, 1969, Ser. No. 847,679
Int. Cl. B05c *5/00*
U.S. Cl. 118—324 12 Claims

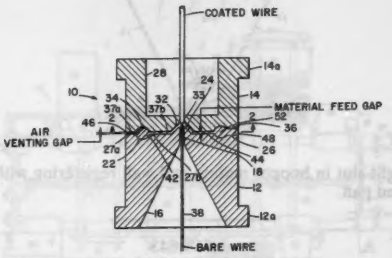


The present invention is broadly concerned with a staining machine for wood panels and the like, such as plywood panels. The invention is more particularly concerned with a staining apparatus which is equipped with a particular design of a nonclogging feed head for applying the stain to the panels. The stain flows through apertures in a feed pipe onto a spreader plate, thence downwardly on a backplate into a reservoir, and then over a lip of the feed head onto the panel being processed.

3,568,640
WIRE COATING TOOL

Horst Kuettner, Huntington, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 18, 1969, Ser. No. 842,851
Int. Cl. B05c *3/02*
U.S. Cl. 118—405 3 Claims



A tool for coating a wire with a pasty material consisting of a pair of elements with a central passageway for the wire forming an annular ring containing the material, a feed gap for carrying the material to the central passageway, and a smaller venting gap extending out from said ring for releasing entrapped gases.

3,568,641
BIRD FEEDER

Peter Kilham, 20 Pleasant St., West Barrington, R.I.

Filed Mar. 3, 1969, Ser. No. 803,583
Int. Cl. A01k *39/00*
U.S. Cl. 119—51 5 Claims

A bird feeder comprising a vertically disposed hollow housing having an opening in a sidewall thereof of a size just sufficient to receive the head or beak of a bird, perch means extending outwardly from the housing just below said opening, and baffle means inside the housing adjacent the top said aperture whereby when the housing is filled with bird seed, the baffle will deflect the seed away from the aperture and at the same time automatically maintain a level of bird seed adjacent the bottom of the aperture for ready access of a bird positioned on the aforesaid perch.

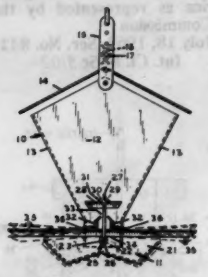
3,568,642
FEED HOPPER WITH DEPENDING TILTABLE FEED PAN

Jack T. Hanby, 902 N. Springfield, Berryville, Ark.

Filed Aug. 29, 1969, Ser. No. 854,234
Int. Cl. A01k *05/00*
U.S. Cl. 119—53.5 3 Claims

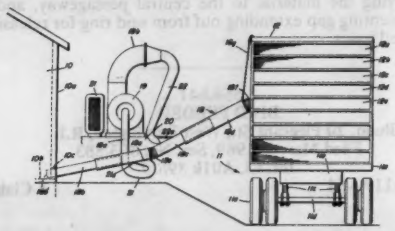
A feed pan end wall pivoted to an eyebolt depended from

a nut locking flanged lug on a hopper end wall. Arms on end of feed pan with spaced gap about the shank of the eyebolt.



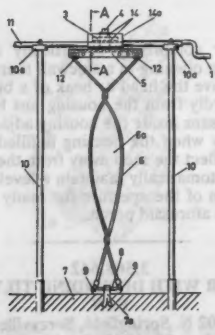
Upright slot in hopper mating end wall registering with pivot of feed pan.

3,568,643
POULTRY-HANDLING SYSTEM
Lon H. Wessinger, 439 Longview St., Carrollton, Ga.
Filed Feb. 24, 1969, Ser. No. 801,507
Int. Cl. A10k *29/00*
U.S. Cl. 119—82 **7 Claims**



Method and apparatus for handling poultry by transferring the same from poultry house to processor by way of bins into which the poultry is urged for transport by a combination of suction and then air under pressure, from which bins the poultry is unloaded at the processor.

3,568,644
STABLING ARRANGEMENT FOR LARGE ANIMALS
Georg Schultes, Waldmichelbach, Germany (8752 Kleinosheim near Aschaffenburg, Hirschpfad 3, Germany)
Filed Apr. 22, 1969, Ser. No. 818,220
Claims priority, application Germany, Apr. 27, 1968, P 17 57 344.3
Int. Cl. A01k *1/00*
U.S. Cl. 119—147 **8 Claims**

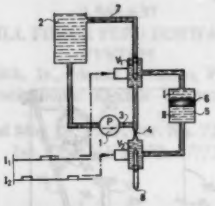


A stabling device for large animals such as cattle that includes a rope having its midportion carried by an overhead support and its opposite ends secured to the floor of a barn. The intermediate length of the rope is crossed above the animal's neck and below its neck. This arrangement permits the animal freedom of movement although it is restrained within its stall.

3,568,645
ROTARY COMBUSTION ENGINE
Clarence H. Grimm, 2734 E. Brill St., Phoenix, Ariz.
Filed Mar. 6, 1969, Ser. No. 804,923
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.45 **3 Claims**

A rotary vane type internal combustion engine in which the radial positioning of the vane during the rotation of the engine rotor shaft is positively positioned relative to the outer shell of the engine, independent of the contact of the outer end of the vane and the inner surface of the outer shell.

3,568,646
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES
Heinz Wehde, Heidelberg, and Horst Brendes, Sandhausen, Germany, assignors to Teldix GmbH, Heidelberg, Germany
Filed Apr. 8, 1969, Ser. No. 814,310
Claims priority, application Germany, Apr. 8, 1968, P 17 51 128.3
Int. Cl. F02d *5/02*
U.S. Cl. 123—32 **13 Claims**



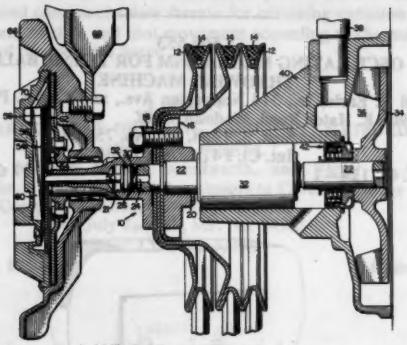
Fuel injection apparatus for use with internal combustion engines having an intermediate reservoir which stores and makes available the quantity of fuel to be injected before each fuel injection operation. The intermediate reservoir is provided with two chambers separated from each other by a moveable dividing wall. One of the chambers is selectively connected by a first three-way valve either with the outlet or high-pressure line of a fuel pump or with a low-pressure return line leading to a fuel supply reservoir. The second chamber is selectively joined by a second three-way valve either with the outlet line of the fuel pump or with at least one fuel injection nozzle.

3,568,647

ENGINE COOLING CONTROL DEVICE

Larry L Adams, Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.

Filed Sept. 9, 1968, Ser. No. 758,499
Int. Cl. F01p 7/02; F16d 31/00, 11/04
U.S. Cl. 123—41.12 3 Claims



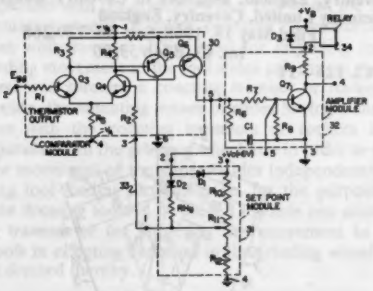
A pressure-responsive fluid-shear coupling for an automobile engine fan. The pressure increase with increasing temperature of a circulating liquid coolant in the cooling system acts directly against a bellows. The bellows in turn controls the flow of a silicone fluid and the degree of coupling between the engine and the fan.

3,568,648

WATER TEMPERATURE CONTROL FOR DIESEL ENGINES

George Robert Cass, Montreal, Quebec, Canada, assignor to Canadian National Railway Company, Montreal, Quebec, Canada

Filed June 20, 1968, Ser. No. 738,699
Claims priority, application Canada, May 22, 1968, 020,647
Int. Cl. F01p 11/14
U.S. Cl. 123—41.15 24 Claims



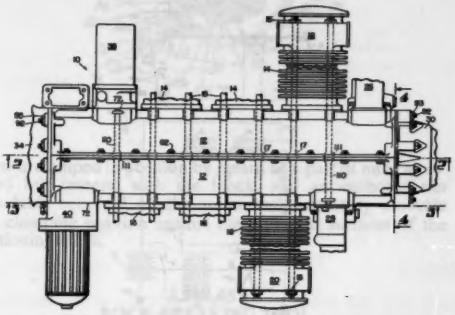
Apparatus for controlling the temperature of a coolant in a circulating coolant system for an engine. The temperature of the coolant is sensed at various points in the system by probes which produce an output voltage proportional to temperature. The probe voltages are compared with predetermined "set" voltages so that if a probe's voltage exceeds its associated "set" voltage, cooling means, warning means, engine shut down means or other suitable means is actuated.

3,568,649

INTERNAL COMBUSTION ENGINE STRUCTURE

Richard H. Syson, Cogan Station, Pa., and John W. Eckert, King, Ontario, Canada, assignors to Arco Corporation, Williamsport, Pa.

Filed Oct. 15, 1968, Ser. No. 767,780
Int. Cl. F02b 75/24; F02f 7/00; F01m 11/02
U.S. Cl. 123—56(A) 8 Claims



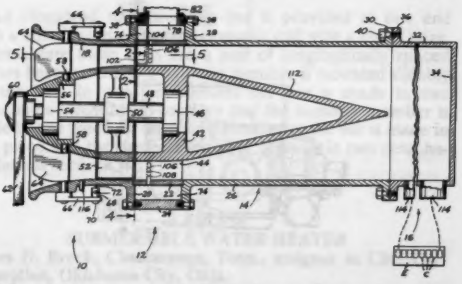
The disclosure illustrates an opposed multicylinder internal combustion engine suitable for aircraft use. The engine is fabricated from a pair of matched crankcase halves which enable die casting for limited production. The matched crankcase halves and rows of cylinder barrels and cylinder heads on opposed sides are secured by bolts which extend the width of the engine. The crankcase halves are mounted together at a series of ribs symmetrically positioned with respect to the midpoint of the crankcase halves. The cylinder barrels are mounted on pads offset from the midpoint so that the opposed barrels are in a staggered relationship on the assembled engine.

3,568,650

SUPERCHARGER AND FUEL INJECTOR ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

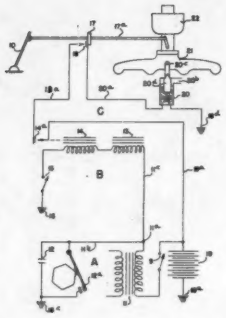
James R. Albrich, Portland, Oreg., assignor to Sonic-Air, Inc., Lake Oswego, Oreg.

Filed Dec. 5, 1968, Ser. No. 781,361
Int. Cl. F02b 33/40
U.S. Cl. 123—119 9 Claims



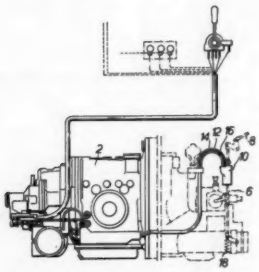
The open air intake end of a hollow housing has adjustable air control shutters to regulate intake air to the transonic rotary vane component of an air compressor. The high velocity air output from the rotor is straightened to axial flow by passage through a stator vane component of the compressor at which combustion fuel is metered to the high velocity air. The fuel-air mixture then is expanded into a collector chamber from whence it is delivered to the intake valve system of an internal combustion engine.

3,568,651
AN INTAKE MANIFOLD ELECTRICAL VACUUM CONTROL FOR AN INTERNAL COMBUSTION ENGINE EQUIPMENT
Norman E. Waag, 3110 Broadview Road, Cleveland, Ohio
Filed Apr. 21, 1969, Ser. No. 827,445
Int. Cl. F02m *23/04;* **F02d** *11/10, 9/00*
U.S. Cl. 123—124 **3 Claims**



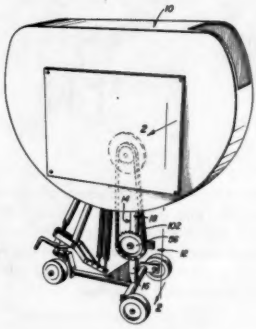
An automatic intake manifold electrical vacuum control device for an internal combustion engine comprising, a primary ignition circuit, an actuating circuit featuring a switching relay whose coil is in series with a filter choke, said actuating circuit energized by an electrical pulse beat from the grounded primary side of the ignition coil and an operational circuit comprising said switching relay actuating contacts in series with a throttle micro switch also in series with an electric air solenoid valve and the series circuit completed and powered by the automotive battery.

3,568,652
VALVE MECHANISMS
Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik AB, Stockholm-Vallingby, Sweden
Filed Feb. 3, 1969, Ser. No. 795,947
Claims priority, application Great Britain, Feb. 7, 1968, 6062/68
Int. Cl. F02m *39/00;* **F17d** *1/10;* **F02d** *1/00*
U.S. Cl. 123—139 **26 Claims**



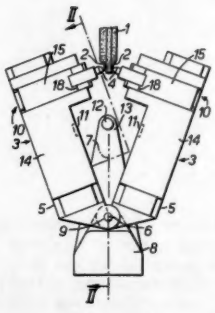
An apparatus for regulating fuel consumption of an internal combustion engine. A valve mechanism forms a part of the connecting linkage between the throttle pedal and a fuel consumption regulating mechanism. Fluid impulses are provided by opening and closing passages through the valve mechanism in response to movement of the throttle pedal and the throttle linkage. Such a valve mechanism may include first and second valve passages, a valve means for placing each of these passages in an open condition or closed condition wherein a biasing force is exerted on the valve means for placing the passages in one of said conditions and an actuating member is provided for displacing the valve means against the biasing force such that in a first position of the actuating member, the first passage is open and the second passage is closed and in a second position of the actuating member the first and second passages are closed and in a third position of the actuating member the second passage is open and the first passage is closed. The elements are arranged such that the force required to displace the actuating member from the second position to the third position is greater than the force required to displace the actuating member from the first position to the second position.

3,568,653
OSCILLATING MECHANISM FOR TENNIS BALL THROWING MACHINE
Fred A. Earle, Jr., 314 Norwegian Ave., and Carl S. Pound, 2900 E. Hatch Road, Modesto, Calif.
Filed Sept. 5, 1968, Ser. No. 757,671
Int. Cl. F41b *7/00, 11/00*
U.S. Cl. 124—1 **17 Claims**



A ball throwing machine having a two-section support including a fixed lower section and a movable upper section which carries the ball throwing mechanism. A motor-driven cam follower assembly is provided on the upper movable section and cooperates with a cam assembly on the fixed lower section so as to bias the rotatable upper section with respect to the fixed section and cause the ball throwing mechanism to move angularly.

3,568,654
GRINDING WHEEL DRESSING APPARATUS
Raymond Leslie Palmer, Solihull, and Norman Darlington, Coventry, England, assignors to Coventry Gauge & Tool Company Limited, Coventry, England
Filed May 15, 1968, Ser. No. 729,268
Int. Cl. B24b *53/00*
U.S. Cl. 125—11 **3 Claims**



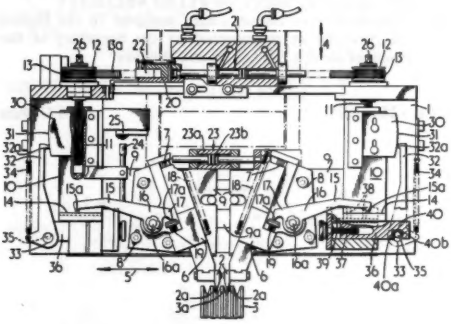
Grinding wheel dressing apparatus is disclosed in which the dressing tool is actuated by cam-operated compound motion

slide means in order to describe an involute or similar curve e.g. for gear or splined shaft grinding purposes and in which a slide carrier for the compound slide means is arranged for angular setting in relation to the plane and corresponding flank profile of the grinding wheel and also in which the dressing tool is carried by the compound slide means for presentation to the flank profile with its axis substantially parallel to the average normal to the required flank profile curve while adjustable variable movement means is interposed between each slide of the compound motion slide means and cam mechanism thereto for obtaining variation in the extent of slide and tool movement according to the magnitude of the required curve.

3,568,655
APPARATUS FOR DRESSING A HELICALLY RIBBED GRINDING WHEEL

Thomas Meyrick Deakin, Kenilworth, and Victor A. G. Cooper, Coventry, England, assignors to Coventry Gauge & Tool Company Limited, Coventry, England

Filed July 2, 1968, Ser. No. 742,048
Int. Cl. B24b *53/00*
U.S. Cl. 125—11 **5 Claims**



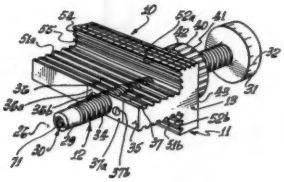
Apparatus for dressing a helically ribbed grinding wheel is disclosed in which head is provided for traversing movement parallel with the grinding wheel axis for traversing a pair of dressing tools across the rib form of the grinding wheel, the dressing tools being carried by corresponding mutually inclined tool slides in turn carried by carrier slides which latter are slidable relative to one another on the head in a direction parallel with the grinding wheel axis whilst the head carries actuating means or slides operable or indexible in conjunction with traverse of the head for imparting incremental feeding movement to the tool slides prior to an operative traverse and through a coacting member or rocker to each tool slide, the actuating means or slides having a sliding cooperation with the coacting members or rockers in a direction parallel with the grinding wheel axis in order to permit relative movement of the carrier slides independently of the dressing tool feeding movement i.e. for the purpose of enabling the dressing tools to be moved towards one another for return traverse or for imparting fine movement to the dressing tools in effecting variation in the grinding wheel rib flank form dressed thereby.

3,568,656
GRINDING-WHEEL DRESSER

Bedrich V. Bliznak, 177 Mutval St., Toronto 2, Ontario, Canada

Filed Mar. 19, 1969, Ser. No. 808,495
Int. Cl. B24b *53/00*
U.S. Cl. 125—11 **7 Claims**

A dressing tool for manually correcting a grinding-wheel surface; the tool is comprised of a positioning block which is formed with right-angle locating surfaces seating on the tool rest table, and a feed screw with cutting diamonds mounted in its end; the latter passes through a smooth bore in the block, extending from its inboard and outboard surfaces; the



screw is clamped in position by means of a pair of nuts, an inboard but integral with the block, and an outboard nut threadably received on the screw and releasably movable into clamping position against the outboard surfaces of the positioning block.

3,568,657
ROCK-BREAKING TOOL

Leonard L. Gue, 4014 N. Massachusetts Ave., Portland, Oreg.

Filed Mar. 8, 1968, Ser. No. 711,708
Int. Cl. B28d *1/26;* **B25d** *11/00*
U.S. Cl. 125—40 **3 Claims**

An elongated rock-breaking bar is provided at one end with a chisel point and at the opposite end with a chisel edge. Intermediate these ends are a pair of longitudinally spaced collars between which a hammer member is mounted slidably on the bar. In one embodiment the bar is made in two detachable longitudinal sections and the hammer member is made in one piece. In another embodiment the bar is made in one piece and the hammer member is made in two detachable lateral sections.

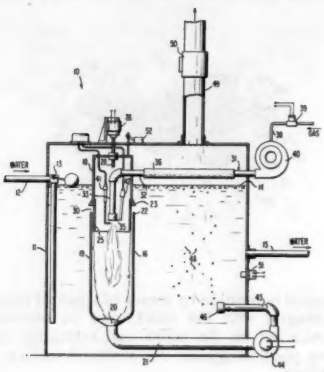
3,568,658
SUBMERSIBLE WATER HEATER

James D. Brock, Chattanooga, Tenn., assignor to CMI Corporation, Oklahoma City, Okla.

Filed Mar. 20, 1969, Ser. No. 808,889
Int. Cl. F24h *1/20*
U.S. Cl. 126—360 **7 Claims**

A water heater comprising a tank, a generally cylindrical burner can positioned in the tank with its long axis extending in an upward direction, water inlet means at the upper portion of the burner can for flowing water from the tank into the burner can, gas injection means communicating with the upper portion of the burner can for introducing a combustion fluid and air mixture to the burner can, and fluid extraction means communicating with the lower portion of the burner

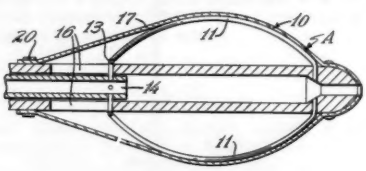
can for evacuating gases and water from the burner can. The gases and water extracted from the burner can are injected back into the water of the tank, and the gases bubble up through the water.



3,568,659
DISPOSABLE PERCUTANEOUS INTRACARDIAC PUMP AND METHOD OF PUMPING BLOOD

James N. Karnegis, 5604 W. 65th St., Minneapolis, Minn.

Filed Sept. 24, 1968, Ser. No. 762,017
Int. Cl. A61b 19/00, 5/02
U.S. Cl. 128—1 5 Claims



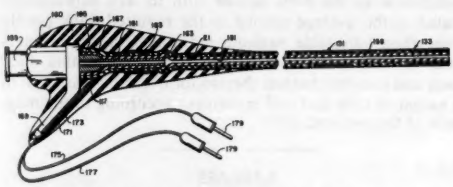
A heart pump is provided including a catheter and catheter tube having at its extremity a series of longitudinally extending ribs extending in angularly spaced relation about the catheter. The ribs are enclosed within a resilient tube which is expanded and contracted by said ribs to more or less fill the left ventricle of the heart. The ribs are flexed from a position generally parallel to the catheter axis to an outwardly bowed position by a flexible member extending into said catheter and through said catheter tube.

3,568,660
PACEMAKER CATHETER

Nelson A. Crites, and Samuel P. Chambers, Columbus, Ohio, assignors to The Battelle Development Corporation, Columbus, Ohio

Filed Nov. 20, 1967, Ser. No. 684,460
Int. Cl. A61b 5/10
U.S. Cl. 128—2 5 Claims

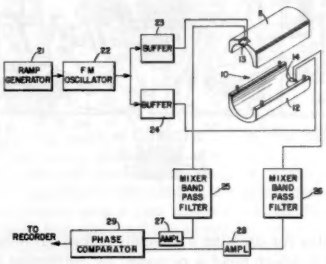
A multipurpose catheter and method of producing the same which involves applying a thin, first layer of rubber over the external surface of a selected length of flexible tubing, with the rubber being dissolved in a solvent and applied to the tubing in an atmosphere of the solvent, partially drying the first layer of rubber, helically winding at least two electrical conducting wires over the surface of the tubing and embedding the wires in the first layer of rubber, drying the first layer of rubber, extracting an end portion of each conductor from beneath the first coating near one end of the tubing and flat winding each end portion to form spaced electrode bases, providing a metal contact sleeve over each base to form electrodes, applying a thin second layer of rubber over the first layer in an atmosphere of the rubber solvent, drying the second layer of rubber, and connecting the opposite ends of the conductors to electrical jacks. A split needle is provided for use in inserting the catheter, the needle being thereafter withdrawn. For facilitating such withdrawal, the needle is constructed in two halves with a slidable cylindrical lock ring.



3,568,661
FREQUENCY MODULATED ULTRASOUND TECHNIQUE FOR MEASUREMENT OF FLUID VELOCITY

Dean L. Franklin, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Department of Health Education and Welfare

Filed Oct. 2, 1968, Ser. No. 764,515
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 6 Claims



A device for measuring fluid velocity of the blood stream utilizing frequency modulated ultrasound transmitted through the moving blood with a composite signal detected, difference frequency signal extracted, phases across each of a pair of transducers compared, and the difference in phase being a measure of blood stream velocity.

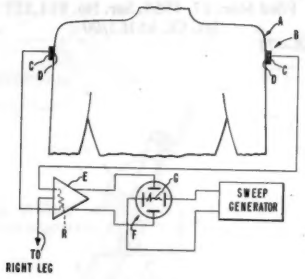
3,568,662
METHOD AND APPARATUS FOR SENSING BIOELECTRIC POTENTIALS

Donald B. Everett, Belmont (931, Commercial St., Palo Alto, Calif. 94303), and Louis W. Schlenz, Sunnyvale, Calif. (931, Commercial St., Palo Alto, Calif. 94303)

Filed July 7, 1967, Ser. No. 651,737
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 15 Claims

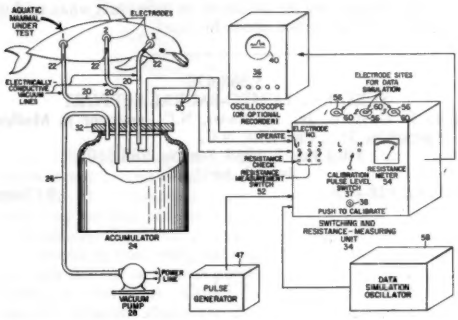
A method and apparatus for sensing bioelectric potentials utilizing a passive, capacitive coupling to the body and establishment by such capacitive coupling of an electrical signal representative of the body potential at the site of such capacitive coupling. The capacitive coupling includes an electrode member and a solid dielectric between the member and a body. In one example, a semiconductor device can serve the function of electrode member and its dielectric and include provision for changing the bias of the device to change the thickness of the dielectric or the effective area of the electrode member. A pair of passive capacitive electrode

couplings to the body are provided with the respective outputs connected to a differential amplifier. The electrode can



be formed in the configuration of a needle for measuring intercellular potentials.

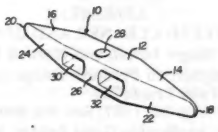
3,568,663
PHYSIOLOGICAL DATA ACQUISITION SYSTEM
Clifford G. Phipps, Newbury Park, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Dec. 23, 1968, Ser. No. 786,130
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **2 Claims**



Apparatus for facilitating the rapid acquisition of bioelectric physiological data from aquatic mammals without requiring the use of engirdling straps or time consuming preparational procedures. A feature of the disclosure is the employment of a plurality of electrodes respectively disposed within flexible cups connected to a vacuum system, the action of the latter serving to establish and maintain tight physical engagement between each of the electrodes and the tissue of the mammal being tested. Inaccuracies in the derived data due to slight electrode displacements, common with conventional apparatus, are thus prevented.

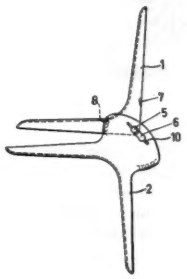
3,568,664
STOMACH TUBE SPECULUM
William F. Meriwether, 1201 S. W. 21st Court, Fort Lauderdale, Fla.
Filed Feb. 12, 1969, Ser. No. 798,589
Int. Cl. A61d *3/00, 15/00*
U.S. Cl. 128—14 **5 Claims**

A feline stomach tube speculum in the form of a double-tapered wedge bar having an elongated central portion dimensioned to fit in and extend transversely across a cat's mouth, and two tip portions extending axially outwardly from the central portion and each tapering down to a narrow terminal edge. The central portion has one hole extending transversely through it for receiving a stomach tube and a pair of holes respectively on opposite sides of the tube hole and in substantially perpendicular relation to the tube hole for receiving the fangs of a cat. The tube hole is preferably paral-



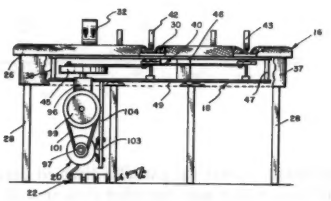
lel to the tip edges. The wedge bar also serves as a jaw opener.

3,568,665
SPECULUM FOR EXAMINATION OF CAVITY
Sture Lindgren, 6, Karlaplen, and Ove Gustav Littorin, 27, Gavlegatan, Stockholm, Sweden
Filed Oct. 21, 1968, Ser. No. 769,301
Claims priority, application Sweden, Oct. 20, 1967, 14407/67
Int. Cl. A61b *1/32*
U.S. Cl. 128—17 **9 Claims**



A speculum comprising a first grooved angle portion of approximately 270° and a second similar portion detachably coupled with a locking mechanism so that an angle leg of each of the two angle portions can be locked in approximately parallel position with adjustable separation to form the speculum probe.

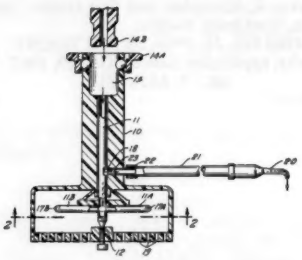
3,568,666
PATTERNING APPARATUS
Colon H. Dunn, 2522 Gentry Drive, Wichita, Kans.
Filed Nov. 12, 1968, Ser. No. 774,634
Int. Cl. A61h *1/02*
U.S. Cl. 128—25 **6 Claims**



A patterning apparatus for patients having some form of interruption of the function of the central nervous system and involving the passive movements of legs the patterning apparatus having a support table; a patterning structure mounted upon the support table; a power means connected to the patterning structure; and means for connecting por-

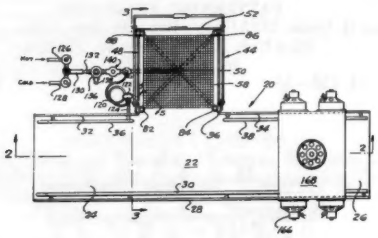
tions of the patterning structure to the legs of a patient for moving of the same in a predetermined pattern for treatment purposes.

3,568,667
HYDRAULIC TEETH CLEANER AND GUM MASSAGER
Stanley Krieger, Singer Island, and Harwell L. Holmes, Lake Park, Fla., assignors to Products Design and Development Company, W. Palm Beach, Fla.
Filed Aug. 14, 1967, Ser. No. 660,314
Claims priority, application Great Britain, Mar. 22, 1967, 13536/67
Int. Cl. A61h 9/00
U.S. Cl. 128—66 2 Claims



Oral hygiene apparatus connectable to and energizable by a pressurized water supply line to produce a pulsating stream of water, or water mixed with a secondary fluid, through a nozzle which is held in the mouth and directed at the gingivi and dental crevices for massaging and cleansing.

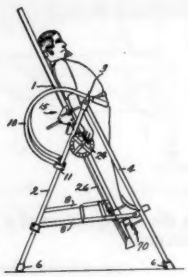
3,568,668
AUTOMATIC SHOWER ASSEMBLY
Harry B. Neis, P.O. Box 738, Parsons, Kans.
Filed June 4, 1969, Ser. No. 830,356
Int. Cl. A61h 9/00
U.S. Cl. 128—66 10 Claims



An automatic shower for partially disabled persons has an enclosed ramp with a side mounted shower stall. The water supply for the stall comprises a series of pipes with special outlets arranged such that water spray is directed to all body areas except the head, and in pulsating streams to eliminate the need for scrubbing and to improve circulation. The water supply also has means for the introduction of cleansing and/or disinfectant solutions into the spray.

A drying chamber is incorporated in the apparatus at some convenient location.

3,568,669
TILTING HEALTH TABLE
Joseph D. Stites, Sarasota, Fla., assignor to Physicare Inc., Sarasota, Fla.
Filed Mar. 27, 1969, Ser. No. 811,157
Int. Cl. A61f 5/00
U.S. Cl. 128—71 4 Claims



A tiltable health table apparatus having a table which is rotatively mounted on a framework, with the table being connected to the framework at a point on the table which will produce an axis of rotation extending across the width of the table. The table has means for adjustably positioning an individual on the table surface, means for adjustably positioning the table and individual in a perpendicular direction from the plane of the table to the pivotal axis, and means for automatically supporting the ankles of an individual when said individual's feet are raised above his head.

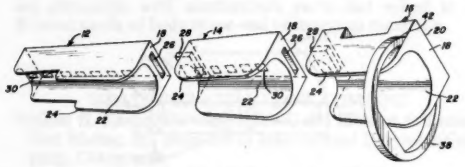
3,568,670
SURGICAL LUMBO-SACRAL SUPPORT
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.
Filed Jan. 2, 1969, Ser. No. 788,510
Int. Cl. A61f 5/02
U.S. Cl. 128—78 9 Claims

A relatively narrow, lumbosacral surgical support having a semirigid, but flexible intermediate panel and a pair of porous elastic end panels stretchable longitudinally and transversely.

3,568,671
SPLINT CONSTRUCTION
James F. Graham, 10039 St. Louis Ave, Evergreen Park, Ill.
Filed June 27, 1969, Ser. No. 837,035
Int. Cl. A61f 5/04
U.S. Cl. 128—87 9 Claims

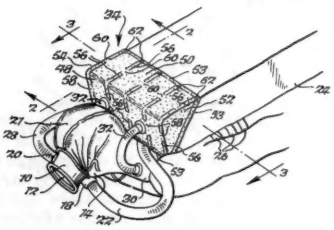
A splint formed of three tapered segments joined end-to-end. Each segment has a flat-bottomed base and a concave limb-receiving portion. The distal and medial segments have a row of spaced apertures capable of selectively receiving an upright foot or hand piece for adjustable longitudinal posi-

tioning. The proximal ends of each segment are apertured to receive the free ends of a split ring which serves to bear



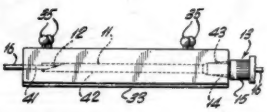
against the axillary or perineal area of the patient during traction. The segments may be used singly or in combination.

3,568,672
BUBBLE DISPERSION DEVICE FOR UNDERWATER BREATHING APPARATUS
Charles D. Cupp, Lancaster, N.Y., assignor to "Automatic" Sprinkler Corporation of America, Cleveland, Ohio
Filed July 3, 1969, Ser. No. 838,864
Int. Cl. A62b 7/00; F01n 7/12
U.S. Cl. 128—142 **7 Claims**



An exhalation dispersing apparatus for use in a water medium comprising a bag adapted to fit and be secured to one end of a container pack which houses cylinders of breathing gas and accessory equipment. The bag comprises substantially coextensive inner and outer liners sealed together along their marginal edges and also along transverse portions thereof to form a plurality of longitudinally spaced dispersing chambers. Cross flow passages are provided between adjacent chambers. A pair of exhalation conduits are connected from a breathing apparatus to the dispersing bag and a plurality of closely spaced, self-sealing apertures are formed over substantially the entire outer liner for dispersing the exhaled gas from the chambers into the ambient water in the form of minute bubbles.

3,568,673
NEEDLE BEVEL GUARD FOR INTRAVENOUS CATHETER
Calvin C. Cowley, Los Angeles, Calif., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Nov. 4, 1968, Ser. No. 772,923
Int. Cl. A61m 5/00
U.S. Cl. 128—214.4 **6 Claims**

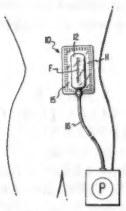


A hinged and closeable guard for maintaining the sterility of an intravenous needle prior to use and for maintaining the catheter in axial alignment with the needle during use.

3,568,674
METHOD OF DEFENSE AGAINST ATTACK
Harold C. Palmer, Rte. 4, King Drive, Douglasville, Ga.
Continuation-in-part of application Ser. No. 388,911, Aug. 11, 1964, now abandoned. This application May 3, 1968, Ser. No. 726,528
Int. Cl. A61m 5/00
U.S. Cl. 128—215 **8 Claims**

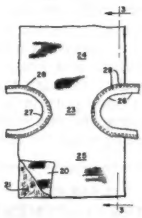
A method of defense for use by a human defender against attack by an assailant comprising the steps of puncturing the skin of the assailant, and injecting a sublethal dose of an initially liquid chemical pain producing substance into the body of the assailant so as to cause him to break off the attack. The pain producing substance is the type that will become ineffective within the body of the assailant after a discreet period of time without causing any permanent ill effects to the assailant.

3,568,675
FISTULA AND PENETRATING WOUND DRESSING
Clyde B. Harvey, Baltimore, Md. (400 Groveland Ave. Minneapolis, Minn. 55403)
Filed Aug. 30, 1968, Ser. No. 756,498
Int. Cl. A61f 5/44
U.S. Cl. 128—275 **7 Claims**



A fistula and penetrating wound dressing including a planar flexible sheet of material and having a plurality of small openings spaced from the edges to permit an adhesive substance such as collodion to be applied thereover to secure the sheet to the body. The central portion of the dressing includes a domed transparent fluid collection chamber having an outlet nipple adapted for connection to an external receptacle.

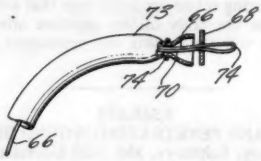
3,568,676
PANTY-DESIGNED DIAPER COVER
Victor R. Del Guercio, 11 Normandy Road, Larchmont, N.Y.
Filed Jan. 8, 1969, Ser. No. 789,862
Int. Cl. A61f 13/16
U.S. Cl. 128—287 **3 Claims**



The disclosure of this invention pertains to a panty-designed diaper cover having an inner and an outer water repellent layer with an intermediate layer therebetween of nonstretchable, nonshrinkable fast drying material, such as a spun-bonded polyester fiber, of the same size and shape as

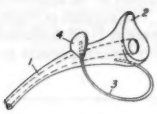
the inner and outer layers and in contact therewith throughout their entire surface areas and substantially free of stitching in the crotch area.

3,568,677
SURGICAL VEIN STRIPPER
John O'L Nolan, Hartford, and Michael D. Bryne, Vernon, Conn., assignors to Brymill Corporation, Vernon, Conn.
Filed Nov. 19, 1968, Ser. No. 777,112
Int. Cl. A61b *17/00*
U.S. Cl. 128—303 **2 Claims**



A surgical vein stripper comprises a rod of semirigid plastic material, such as nylon or Teflon, with means provided at the end thereof so as to permit nonslipping engagement with a vein, which is to be stripped, tied the end of the rod with a suture. The means may comprise a molded or forged enlargement, a transverse pin, suitable indentations or serrations, or a transverse annular ring which engages a loop in the rod of material.

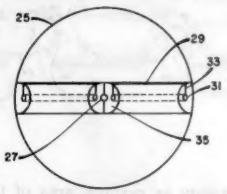
3,568,678
SELF-ATTACHING NASAL TUBE OF ACCEPTABLE APPEARANCE
Henri Pourquier, 24, Bd Berthelot a Montpellier, and Michel Combres, 4, Rue D'Alger a Montpellier, Herault, France
Filed July 25, 1968, Ser. No. 747,542
Claims priority, application France, July 25, 1967, Nov. 23, 1967, 1780;1785
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 **11 Claims**



A nasal tube attaching device comprising a body portion having an opening extending axially therethrough. The body is in the configuration of a truncated cone having a tapered end and a substantially triangular end having a configuration substantially conforming to the natural configuration of a human nostril. The tapered end of the body portion extends inwardly of the nostril and the base portion includes a flat surface which is in substantially the same plane as the nostril opening when the device is in position within the nostril. The tapered end is adapted to receive a medical tube which extends inwardly of the patient and which is in communication with the opening extending through the body portion. The area of the base of the body portion is less than that of the area of the nostril opening, thereby providing breathing area through the nostril opening when the device is in position.

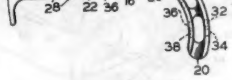
3,568,679
CATHETER PLACEMENT UNIT
James R. Reif, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Nov. 12, 1968, Ser. No. 774,662
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 **2 Claims**

A unit for retaining a catheter in a desired place within a body is disclosed. A thin disk of flexible material, preferably silicone rubber, is adhesively secured to any desired external surface of a body. If the surface has already been punctured, a desirable catheter is then introduced into the body through an aperture in the disk, otherwise a trocar can be used to



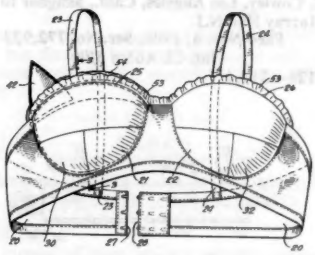
puncture the surface and introduce the catheter into the body. When the catheter has been placed in the desired position, it is then locked in place by a locking device affixed to the disk.

3,568,680
OROPHARYNGEAL AIRWAY
Victor H. Raimo, 214 Ballentine Parkway, Newark, N.J.
Filed Oct. 4, 1968, Ser. No. 765,215
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **1 Claim**



An oropharyngeal airway for use during surgery comprises a contoured portion in the shape of the pharyngeal contour, and includes a pair of passageways formed by a pair of curved substantially planar members connected in spaced substantially parallel relation by an internal generally central web portion. The planar members are each provided with a plurality of spaced holes distributed along their contoured portions and providing communication between the outer surfaces of the airway and the passageways to aid in preventing clogging or blockage of the airway due to the accumulation of fluids in the mouth and pharynx.

3,568,681
PROSTHETIC BRASSIERE AND METHOD OF MAKING SAME
June M. Comollo, 60 West 57th St., New York, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,369
Int. Cl. A41c *3/10*
U.S. Cl. 128—478 **15 Claims**



Prosthetic articles, for use after breast surgery, are constituted by assembly, with a basic brassiere casing, of selecta-

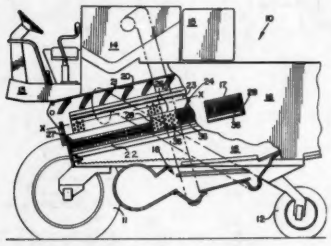
ble pad elements of three types, namely a basic simulative element, an extension element for upward oblique disposition, and an arcuate element mountable at the upper rear of the basic element, whereby completed, well-fitting structures are obtainable with standardized parts, but suited to individual needs of body shape and postsurgical condition.

3,568,682

GRATE FOR AXIAL FLOW COMBINE

William H. Knapp, Davenport, Iowa, and Richard E. Benson, East Moline, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Sept. 17, 1969, Ser. No. 858,694
Int. Cl. A01f *12/26*
U.S. Cl. 130—27 **7 Claims**



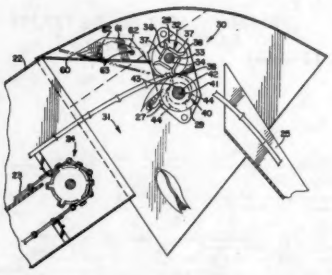
A removable grate for an axial flow combine made up of a plurality of independent sections each of which are of a weight and size that can be readily handled by the combine operator. An access opening is formed in the combine sidewall through which sections of the grate can pass and be slid into a shelflike retainer. The last section is secured into place by locking means and serves to hold the other sections in place.

3,568,683

TRASH ROLLS FOR CORN HARVESTER

Ralph L. Sutton, Rock Island, and Lawrence L. Cornelius, Moline, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed July 10, 1969, Ser. No. 840,646
Int. Cl. A01d *45/02*
U.S. Cl. 130—30 **10 Claims**



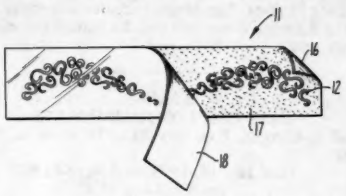
A trash removal apparatus, for mounting on the upper end of a corn harvester elevator, having an upper knife roll and a lower contoured roll. The lower contoured roll has pads that cooperate with the knife roll for shearing the stalks and pockets that control the ears to prevent damage.

3,568,684

MAKEUP DEVICE

Jeanne F. Reece, Santa Cruz, Calif. (1126 McIntyre, Ann Arbor, Mich. 48104)

Filed Apr. 28, 1969, Ser. No. 819,825
Int. Cl. A45d *44/00*
U.S. Cl. 132—1 **3 Claims**



A transfer for providing an eye shadow on an eyelid comprising a paper sheet having an shadow print of water resistant pigmented make up composition paint carried thereon in the desired design configuration, a water washable adhesive on said shadow print and said sheet, and a protective cover fitting over said makeup composition and adhesive, a method of providing the eye shadow which comprises the steps of preparing the eyelid for receipt of makeup, pressing the above defined transfer against the eyelid in desired orientation, adding water to wet the paper and separate the paper from the transfer, removing the paper while leaving the paint on the eyelid, washing off the excess adhesive and covering the paint with a thin layer of powder prior to closing the eyelid.

3,568,685

TREATING HUMAN, ANIMAL AND SYNTHETIC HAIR WITH A WATER-PROOFING COMPOSITION

Howard L. Scott, 1831 N 57th St., Philadelphia, Pa.

Continuation-in-part of application Ser. No. 386,730, July 31, 1964, now abandoned. This application Apr. 15, 1968, Ser. No. 721,158
Int. Cl. A61k *7/10;* **D06m** *3/10, 3/40*
U.S. Cl. 132—7 **6 Claims**

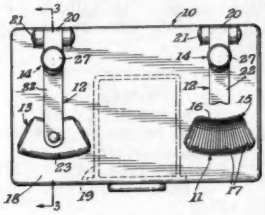
A method for treating fibers such as synthetic or natural hair, whereby synthetic fibers can be made to have the appearance of human hair and whereby human hair can be straightened, which comprises applying to the hair a composition containing about 1—50 percent by volume of a substantive water-repellent agent, and about 10—80 percent by volume of a substantive hardening and adhesive agent. A slipping agent, such as a fluoro resin, and en emollient, such as lanolin, is also preferably included.

3,568,686

EYELASH DRYING AND CURLING DEVICE

Belestera B. Navrozides, 247 S. Kenmore Ave #2, Los Angeles, Calif.

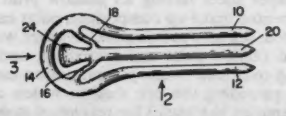
Filed Dec. 3, 1969, Ser. No. 881,696
Int. Cl. A45d *2/48*
U.S. Cl. 132—31 **6 Claims**



A device for drying, curling and storing false eyelashes, comprising a base having a flat top provided with a pair of

similar, transversely concave, depressions in which false eyelashes, after they are cleaned, are adapted to be placed, and two pads of porous, compressible material, each removably carried by an end of a normally raised resilient arm, the opposite ends of which are connected to said base top so that, upon depression of the pad-carrying ends of the arms, said pads are resiliently pressed against the eyelashes in the cavities to dry and conform them to the transverse curvature of the cavities. The device includes releasable means for retaining the arms depressed and the pads thereon in eyelash-curling contact.

3,568,687
HAIR CLIP FOR HAIR HOLDERS
Michael J. Ciccone, P.O. Box 333-337 Main St., Stoneham, Mass.
Filed July 18, 1969, Ser. No. 842,897
Int. Cl. A45d *8/14*
U.S. Cl. 132—46 **4 Claims**



An integral onepiece plastic hair clip having a finger-grip construction at one end thereof and having an opposite free end portion comprising a pair of elongated fingers adapted to grip the hair on the outside of the roller and a single interconnected resilient finger intermediate the first two fingers for insertion in the hair roller, all of said fingers being interconnected by a resilient portion which allows the finger-grip area to separate the pair of fingers from the single finger for applying to hair wound on a roller.

3,568,688
COMB
Robert J. Dobuski, Yardley, Pa., assignor to Vulcanized Rubber and Plastics Company, Morrisville, Pa.
Filed Nov. 8, 1968, Ser. No. 774,336
Int. Cl. A45d *24/04*
U.S. Cl. 132—139 **7 Claims**

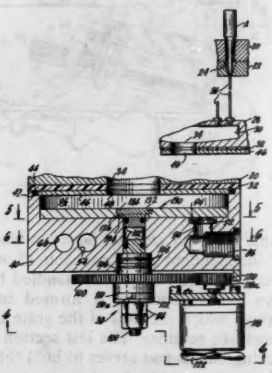
A very light and very strong comb provided with oppositely directed teeth of different spacing is constructed with alternate, longitudinally extending parts in relief and intaglio, which provides exceptional strength, and with teeth which compress and release the locks of hair as they are drawn through them.

3,568,689
SANITARY COMB
Gino J. Piermarini, 443 Pleasant St., and Norman C. Burnap, 319 Pierce St., Leominster, Mass.
Filed Apr. 25, 1968, Ser. No. 724,005
Int. Cl. A45d *24/00*
U.S. Cl. 132—147 **1 Claim**

A hairdressing comb comprising teeth merging into a relatively wide back which has a longitudinal depression therein communicating with spaces between the teeth, the depression extending down into the mid range of the length of the teeth. The depression is wider at the back of the comb than at its bottom where it intersects the spaces between the teeth,

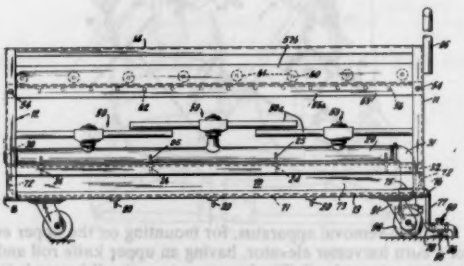
and the sides are curved at least in the area of the bottom of the depression at the tooth intersection.

3,568,690
WASHING MACHINE AND VALVE THEREFOR
Rudolph N. Price, 59 Mill Spring Road, Manhasset, N.Y.
Filed Oct. 9, 1968, Ser. No. 766,074
Int. Cl. B67c *1/00*
U.S. Cl. 134—98 **6 Claims**



An improved machine for washing vials, ampules and the like is provided with a series of critically located apertures in a rotatable valve plate that sequentially registers with accurately located ports for water, steam or air, rinse fluids and for drainage.

3,568,691
WASHING CART AND MEANS FOR CONTROL THEREOF
Richard B. Kennedy, Ridgefield, Conn.; Alfred B. Huston, Homewood, Ill., and Owen H. Griswold, Westwood, N.J., assignors to Better Built Machinery Corporation, New York, N.Y.
Filed May 7, 1968, Ser. No. 727,289
Int. Cl. B08b *3/02, 9/00*
U.S. Cl. 134—144 **16 Claims**



The cart or transport vehicle is moved across the floor or along other means of transport, such as conveyors or over-

head monorail, into a washer chamber, and has means for attachment to a fluid connection in the chamber, through which washing and/or rinsing fluid is coupled to spray devices on the cart for washing a load of items placed on the cart. The cart is equipped with a drip pan that drains while the cart is within the washing chamber but which retains drippage from the washed load when the cart is removed from the washing chamber, to minimize wetting hazards of the floor over which the cart is to be moved when removed from the chamber. A fluid connection between the cart and a fluid supply within the chamber is so designed that no thrust is transmitted to the cart and the connection is automatically sealed by the fluid pressure.

3,568,692

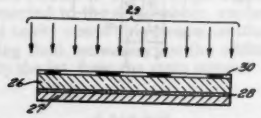
OPTICAL MACHINING PROCESS

Eric E. Metzger, Silver Spring, Md., and George D. Hinschelwood, Washington, D.C., assignors to Bowles Engineering Corporation, Silver Spring, Md.

Original application Aug. 24, 1962, Ser. No. 219,168. Divided and this application Nov. 27, 1967, Ser. No. 708,456

Int. Cl. F15c *5/00*

U.S. Cl. 137—81.5 **7 Claims**



A fluid amplifier includes a rigid base, a layer of light-absorptive adhesive overlying a surface of the base and a layer of light-polymerizable plastic bonded to the base by the adhesive; the light-polymerizable material being solid in the unpolymerized state and in the polymerized state having a plurality of channels and nozzles formed therein to define a fluidic element. A cover plate seals the channels and nozzles to complete the element.

3,568,693

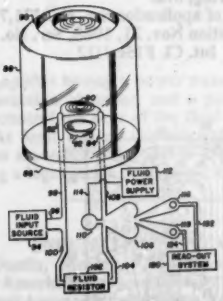
FLUIDIC SENSING DEVICE AND METHOD

Julius Friedrich Vandrey, Perry Hall, Md., assignor to Martin-Marietta Corporation, New York, N.Y.

Filed Apr. 28, 1967, Ser. No. 634,538

Int. Cl. G01k *11/00;* **F15c** *4/00*

U.S. Cl. 137—1 **13 Claims**



A sensing element for use with fluidic circuitry. The element is formed of a length of capillary tubing having a pressure detecting tap at both ends. By imposing an electric current along the tube, the viscosity of fluid within the tube is altered by heating and a fluidic transducer is obtained. Also, by subjecting the capillary tube to external radiation, it will function as the sensing element of a radiation sensing bolometer.

3,568,694

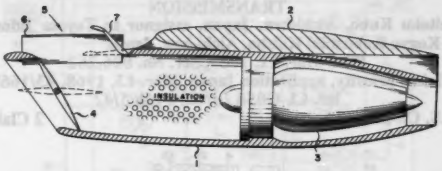
JET ENGINE INSTALLATION FOR NOISE CONTROL

Clarence L. Johnson, Encino, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 8, 1968, Ser. No. 727,523

Int. Cl. F02k *11/00*

U.S. Cl. 137—15.1 **1 Claim**



A jet or fan-jet engine installation wherein inlet noise is reduced on takeoff and landing by changing the direction of the noise radiated from the inlet and by using an inlet duct having soundproofing. Exhaust noise is reduced by use of tertiary air bleed (or quaternary bleed) to reduce the shearing velocity of the final jet.

3,568,695

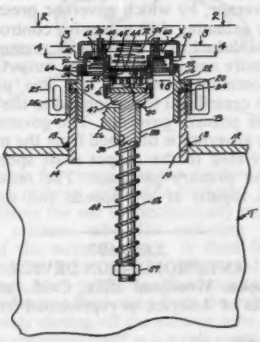
FLUID PRESSURE RELIEF VACUUM RELIEF, AND OVERTURN CHECK VALVE

Joseph H. DeFrees, Warren, Pa., assignor to Raymond Vincent Heelan, Jr., Moorestown, N.J.

Filed Apr. 7, 1969, Ser. No. 813,961

Int. Cl. F16k *17/18*

U.S. Cl. 137—43 **9 Claims**



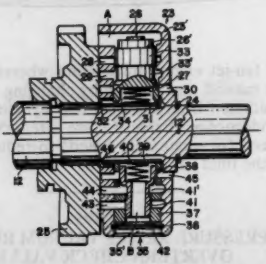
A fluid pressure relief valve for a top vent opening in a fluid storage tank including an exhaust safety valve poppet biased to a normally closed position against the vent opening, such poppet being displaceable to an open position when fluids interiorly of the tank exceed a relatively substantial predetermined pressure. The poppet has vacuum vent apertures leading from the tank interior to the tank exterior with a reciprocable vacuum disc disposed on the underside of the poppet and held in a normally closed position against the apertures, such vacuum disc being displaceable inwardly of the tank to open position when fluid pressure interiorly of the tank falls below a predetermined amount. The poppet contains a vertically disposed poppet bore connecting the tank interior with the tank exterior and including a restricted bore portion which forms, at the upper end of the bore, and annular small pressure valve seat. A small pressure valve disc is biased to a normally closed position against such seat, such that the disc is displaceable to an open position when fluids interiorly of the tank exceed a relatively slight predetermined pressure. the restricted bore portion also forms an annular

check valve seat disposed within the poppet bore and spaced from the upper end thereof. The valve further includes a free-floating check valve disc disposed within the poppet bore below the check valve seat and of lesser diameter than the poppet bore and is displaceable by gravity within the poppet bore to seat against the check valve to prevent inadvertent escape of fluids from the tank when the tank is at least partially overturned.

3,568,696
GOVERNOR CONTROL FOR AUTOMATIC TRANSMISSION

Seitoku Kubo, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 11, 1969, Ser. No. 806,262
Claims priority, application Japan, Mar. 13, 1968, 43/16695
Int. Cl. G05d *13/10*; F16h *5/42*
U.S. Cl. 137—54 2 Claims

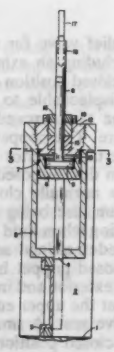


A governor assembly for the control system of an automatic transmission is composed of two governors, a primary governor and a secondary governor, each mounted on the output shaft of the transmission in a symmetrical arrangement with respect to the axis of the output shaft. Modulator pressure produced by the primary governor is applied to the secondary governor, by which governor pressure as a pressure signal for actuating shift valves for controlling the transmission is established. The modulator pressure is obtained from line pressure and is related to the output shaft speed by controlling communication with the line pressure in accordance with centrifugal force applied to the movable valve member of the primary governor. The governor pressure of the secondary governor is obtained from the modulator pressure and is related to the output shaft speed in a similar manner to the primary governor. The resulting governor pressure rises rapidly at low speeds and slowly at higher speeds.

3,568,697
ANTIPROPULSION DEVICE

Angela G. Tasca, Woodland Hills, Calif., assignor to the United States of America as represented by the Secretary of the Army

U.S. Cl. 137—68 5 Claims

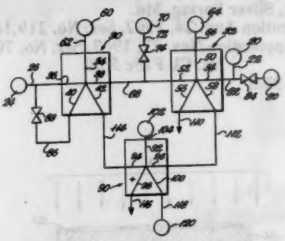


An antipropulsion or safety device to prevent the inadvertent firing of a missile by supporting an oxidizer burst diaphragm to keep it from bursting if a propellant gas generator is accidentally ignited. The device includes a beam to support the burst diaphragm located at the end of the propellant gas generator, a rod secured to the beam, a keyhole stop for sliding engagement with the rod, torque producing means in the stop encircling the rod and an operating handle secured to the rod.

3,568,698
LIQUID LEVEL CONTROL SYSTEM EMPLOYING FLUIDIC DEVICES

William R. Bodwell, Norfolk, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Dec. 9, 1966, Ser. No. 600,620
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 11 Claims

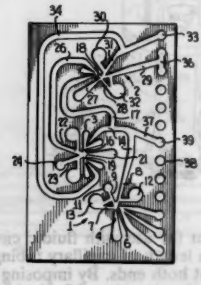


A control system is provided for maintaining the liquid level in a container within an upper and a lower limit. Upper and lower sensing devices are connected in the system for controlling the pressure applied to certain fluidic devices in the system. In the first modification, a pair of proportional amplifier fluidic devices are provided, one of the sensing means being operatively connected with each of these devices. The outputs of the two fluidic devices are connected with a bistable fluidic device, the output of which is connected with a liquid level control mechanism such as a pump or valve for adjusting the liquid level in the tank. In a second modification, a proportional amplifier fluidic device is provided which is connected with both of said sensing means. The output of this fluidic device is in turn connected with a bistable fluidic device the output of which is connected with a suitable liquid level control mechanism.

3,568,699
LEADING AND/OR TRAILING EDGE PULSE SHAPER

Peter Bauer, Germantown, and William R. Mentzer, Jr., Silver Spring, Md., assignors to Bawles Engineering Corporation, Silver Spring, Md.

Continuation-in-part of application Ser. No. 771,758, Oct. 30, 1968. This application Nov. 21, 1968, Ser. No. 777,695
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 14 Claims



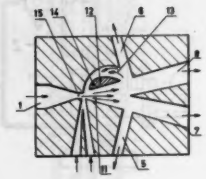
A simple three element fluidic leading edge and/or trailing edge pulse shaper is supplied which in response to an input signal pulse of predetermined duration produces a sharp

pressure pulse at the leading edge of the input signal pulse but does not produce a pulse at the trailing edge of the input pressure pulse.

3,568,700
FLUID AMPLIFIER

Henk A. M. Verheist, Velp, and Cornelis J. Van Gorp, Dieren, Netherlandsdel en Verkeer

Claims priority, application Netherlands, Dec. 20, 1967, 67/7363
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 3 Claims

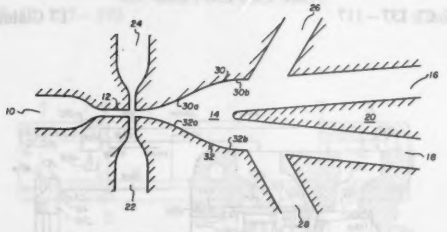


The invention relates to a fluid amplifier provided with a jet cavity connected to the atmosphere, exclusively by blow openings. Said cavity containing stream conductors, separating recirculating fluid, necessary for the addition of fluid to be entrained by the jet, from the main stream.

3,568,701
FLUID AMPLIFIER WITH IMPROVED INTERACTION REGION

George Mon, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Mar. 3, 1969, Ser. No. 803,707
Int. Cl. F15c *1/06*
U.S. Cl. 137—81.5 8 Claims



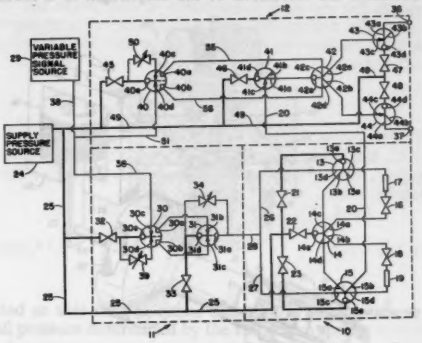
A fluid amplifier having a power nozzle for supplying fluid into an interaction chamber, and a pair of control nozzles adapted to control the flow of the fluid into a pair of output receivers. At least one of the sidewalls of the interaction chamber has a configuration that is effectively defined by a curve having a logarithmic configuration.

3,568,702
PNEUMATIC OSCILLATOR

Miles O. Dustin, Mentor, Ohio Administrationthe United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 7, 1969, Ser. No. 805,298
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 7 Claims

A pneumatic oscillator or analogue-to-digital converter includes a fluid oscillator circuit, a conditioning circuit and an output selector circuit. Three bistable fluid amplifiers with interconnecting pneumatic R-C circuits make up the oscillator which has a frequency range down to 0 pulses per second. Control signal pressure is supplied to the oscillator through the conditioning circuit which controls the frequency range of the oscillator. Output pulses from the oscillator are

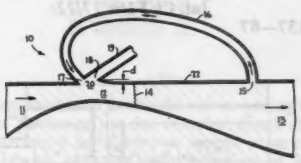


directed to one or the other of a pair of output ports through an output selecting circuit.

3,568,703
SUPERSONIC JET ENGINE INLET FLUERIC BYPASS CONTROL

Raymond W. Warren, Mc Lean, Va., and Allen B. Holmes, Rockville, Md., assignors to the United States of America as represented by the Secretary of the Army

Filed Apr. 7, 1969, Ser. No. 814,024
Int. Cl. F15c *4/00, 1/04*
U.S. Cl. 137—81.5 8 Claims



A flueric system for controlling the position of the normal shock wave in a turbojet diffuser is disclosed. Control is accomplished without the use of mechanically moving parts by providing an exhaust tube for reducing the pressure downstream of the normal shock. A fluid feedback path which is responsive to a pressure differential on opposing sides of the shock wave produces a fluid control signal which is capable of deflecting fluid away from the exhaust tube and thereby effectively closing off the exhaust tube whenever the shock wave has relocated itself in a stable position.

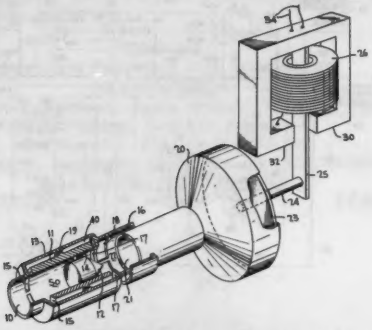
3,568,704
FLUIDIC GENERATOR WITH VELOCITY DISCRIMINATION

Carl J. Campagnuolo, Potomac, and Henry C. Lee, Crofton, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 27, 1969, Ser. No. 853,411
Int. Cl. F15c *1/08, 4/00*
U.S. Cl. 137—81.5 3 Claims

Air is caused to simultaneously enter an inner nozzle in which a cylindrical plug is centrally located to form an annular orifice, and an outer nozzle in which fluid resistors are located to limit the maximum fluid pressure therein. The air discharging from the outer nozzle interferes with the air emanating from the annular orifice until such time as the fluid pressure from the latter is greater than that from the former. After that time, the air discharging from the annular orifice impinges directly on the edge of a resonating cavity producing a multiple frequency edgetone. The column of air in the resonating cavity is thereby caused to vibrate at a

frequency determined by the depth of the cavity. The changes in pressure within the resonating cavity cause a diaphragm forming an end of the cavity to pulsate inwardly and outwardly. A rod is attached to the diaphragm, and this rod transmits the vibrations of the diaphragm to a metallic



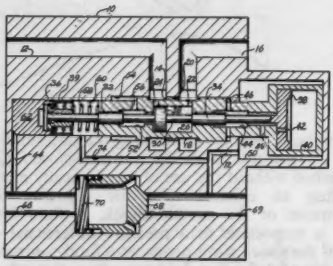
reed which will then oscillate between a pair of magnetic pole pieces. The oscillations of the reed will induce an electromotive force in a coil. The electromotive force induced in the coil may be made available to provide energy to operate an external electrical circuit.

3,568,705

HYDRAULIC SYSTEM CIRCUIT BREAKER

George I. Boyadjieff, Woodland Hills; Robert K. Van Ausdal, La Crescenta, and Ralph L. Vick, Granada Hills, Calif., assignors to The Bendix Corporation

Filed Aug. 19, 1969, Ser. No. 851,288
Int. Cl. F16k *17/22*
U.S. Cl. 137—87 **9 Claims**



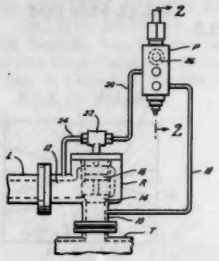
A hydraulic circuit breaker or fail-safe device is disclosed for sensing leaks in lines to and from hydraulic actuators or the like. Flow through the line is sensed across a restriction on a piston valve member movable to close the line, the size of the restriction being such that flow in excess of normal requirements causes a significantly increased pressure drop, which drop is sensed across a quantity measuring piston movable in a chamber within the piston-valve, and causing the latter piston to move within its chamber at a rate controlled by the area of a control orifice. As this latter piston moves, it carries a shaft which is spring biased to resist movement until the pressure drop across the restriction reaches a value indicative of a leak. Two spool valve members are carried on the shaft whose function in the two embodiments shown is to direct either supply pressure or lower pressure against operating areas of the piston-valve to control its movement to open or close the line. A check valve is placed in a return line and an additional piston in contact with the biasing spring senses a leak in the return line as indicated by a changed pressure drop across the check valve and moves to either remove the effective spring bias on the shaft or to move the shaft directly such that the spool valve members direct flow to cause the piston-valve to close the line.

3,568,706

PRESSURE RELIEVING SYSTEM

Irvin B. Weise, Bellaire, Tex., assignor to Anderson Greenwood & Co., Houston, Tex.

Filed Feb. 6, 1969, Ser. No. 796,961
Int. Cl. F16k *17/10*
U.S. Cl. 137—112 **4 Claims**



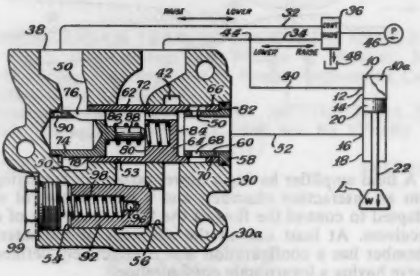
A pressure-relieving system including a main relief valve, a pilot valve which controls the pressure setting for relief and blowdown through the main valve and a back flow preventer which prevents reverse flow through the main valve. The pilot valve assures that there is no reverse flow through the fluid pressure supply line and thereby allows field testing of the valve to determine if it is functioning properly while the pilot valve is installed in the system controlling the operation of the main valve.

3,568,707

QUICK DROP VALVE

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 16, 1968, Ser. No. 784,053
Int. Cl. F15b *11/08*
U.S. Cl. 137—117 **17 Claims**

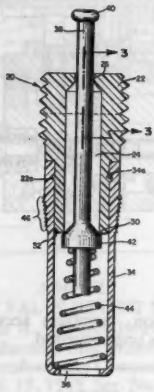


Quick drop valve and circuit employing same for hydraulically positioning and supporting a dozer blade. The circuit includes a double acting positioning cylinder supporting the blade, a raise-lower valve connected to hoses which lead to the cylinder, and the quick drop valve which valve is interposed between the hoses and cylinder and which valve increases dropping speed of the blade by passing fluid between opposite ends of the cylinder in a direct path without the fluid passing through the control valve and cylinder hoses. The valve has a conventional check valve therein, and the only other movable valve part therein consists of a novel single valve sleeve.

3,568,708
TIRE VALVE CORE

Robert B. Ashman, St. Louis, Mo., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed July 15, 1969, Ser. No. 841,945
Int. Cl. F16k *15/20*
U.S. Cl. 137—234.5 5 Claims

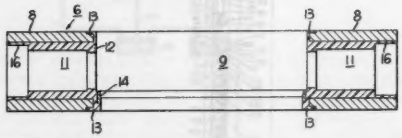


A tire valve core which has a two-piece plastic body wherein the parts interfit in snap engagement. Seal in tire stem is assured as the tapered plastic side of the body wedges against the stem shoulder.

3,568,709
CORROSION RESISTANT BODY LINING AND SEAT FOR BUTTERFLY VALVE

Paul E. Fitting, Camp Hill, Pa., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 14, 1968, Ser. No. 775,844
Int. Cl. F16k *27/12, 1/226*
U.S. Cl. 137—375 2 Claims



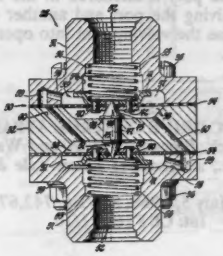
A butterfly valve wherein all of the surfaces of the valve body which are exposed to the fluid being controlled by the valve is covered with a one piece corrosion-resistant lining. The valve also includes a corrosion-resistant seat which is supported and retained by the lining.

3,568,710
BIDIRECTIONAL RESISTANCE VALVE

Floyd J. Boyer, and Eugene E. Ervin, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 10, 1969, Ser. No. 856,775
Int. Cl. F16k *17/26*
U.S. Cl. 137—493.9 2 Claims

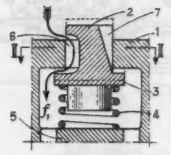
A bidirectional resistance valve to be employed in a control line allows fluid pressure to be transmitted in either direction only when the difference in pressure from one side of the valve to the other is above a predetermined amount. The valve thus prevents minor oscillations in control pressure from being transmitted. The valve has two spring-biased diaphragms each of which has an opening which acts as a movable valve seat and cooperates with a fixed cone or needle to provide a valve which positively seats to restrain flow in one direction but which opens against a weak spring to allow flow in the other direction. The two valves are connected so that flow in either direction is possible above the small pressure determined by the respective spring.



3,568,711
VEHICLE SHOCK ABSORBERS

Maurice Katz, 71, rue Raynouard, Paris 16 eme, France

Filed June 27, 1968, Ser. No. 740,638
Claims priority, application France, June 29, 1967, 112,434
Int. Cl. F16k *15/02*
U.S. Cl. 137—516.11 4 Claims

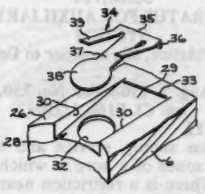


This invention relates to hydraulic valves having a double flow control of particular use for vehicles' shock absorbers. The valve is arranged between two spaces separated by a piston of the shock absorber and comprises at least one movable obturating member subjected to the pressure of the operating fluid. In accordance with the invention, the valve comprises at least two separate channels for the passage of the fluid and these channels are of different section and mutually displaced. The channels are closed in the rest position by a support for the closure member, the larger being opened by displacements of small amplitude of the closure member and the smaller channel being substituted for the larger one by larger amplitude displacements of the closure member.

3,568,712
SUCTION VALVE FOR ROTARY COMPRESSOR

Dean C. Rinehart, Louisville, Ky., assignor to General Electric Company

Filed Apr. 1, 1969, Ser. No. 811,816
Int. Cl. F16k *15/00, 21/04*
U.S. Cl. 137—525.3 3 Claims



A rotary compressor comprising a cylindrical wall member and an end plate forming a compression chamber has a chan-

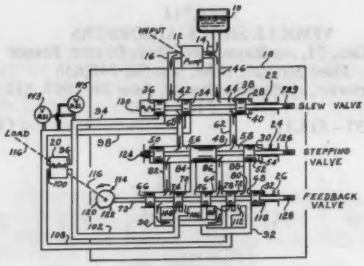
nel in one end of the cylindrical member which with the end plate forms a V-shaped inlet chamber or recess opening into the compression chamber. The cylindrical member includes a suction port opening into this recess. A flexible V-shaped valve means for the port is anchored in the recess and includes one arm valving the port and another arm engaging the end plate to bias the valving arm into operative position relative to the port.

3,568,713

HYDRAULIC DRIVE CONTROL APPARATUS

Werner G. Holzbock, Bloomfield Hills, and Wade R. Brown, Southfield, Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed July 5, 1968, Ser. No. 742,674
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 **17 Claims**



Disclosed herein is control apparatus for a hydraulic drive arrangement providing the drive arrangement with standby, intermittent, and continuous modes of operation. A fluid pressure source, hydraulic motor, and control apparatus for regulating fluid flow between the fluid source and the motor form the drive arrangement. The control apparatus includes a plurality of flow paths through the apparatus, a plurality of valves disposed in the flow paths with each valve having a plurality of operating positions, and structure for operating the valves to move the valves between the various operating positions to regulate fluid flow through the control apparatus. A mechanical feedback loop operable in response to a predetermined angular incremental advance of the motor controls the operating position of one of the valves whereby the motor may be utilized for the positioning of a driven member or load accurately and rapidly either in a series of predetermined increments or in a single continuous operation.

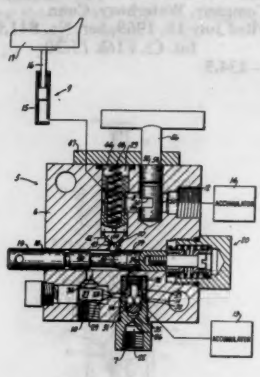
3,568,714

CONTROL APPARATUS FOR AUXILIARY HYDRAULIC SYSTEM

Verne P. Donner, Palatine, Ill., assignor to Deltrol Corp., Bellwood, Ill.

Filed Aug. 7, 1968, Ser. No. 750,896
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.12 **7 Claims**

A valve body has supply, service and exhaust passages leading to spaced zones of a bore in which a closed-center spool is slidable. There is a restriction near the inlet of the supply passage. An accumulator passage and a passage controlled by a relief valve communicate with the supply passage at a zone thereof between said restriction and the bore. Accumulator pressure is therefore lower than pressure in a main hydraulic system to which the supply passage inlet is connected. A check valve in the supply passage, between said



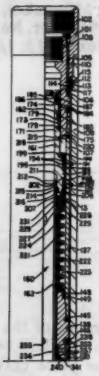
zone and the restriction, maintains accumulator pressure when the main system is unpressurized.

3,568,715

WELL TOOLS

Donald F. Taylor, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original application Feb. 8, 1968, Ser. No. 469,978. Divided and this application Feb. 8, 1968, Ser. No. 724,304
Int. Cl. E21b *23/00*
U.S. Cl. 137—613 **15 Claims**



This invention relates to well tools and more particularly to a flow conductor assembly for use in a well installation employed during the drilling of a well and to well tools usable in such flow conductor assembly.

3,568,716

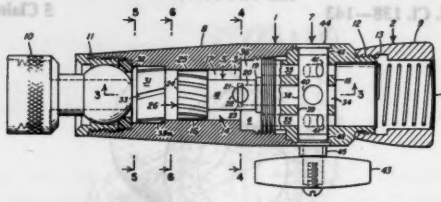
TURBINE DRIVEN PULSATING DEVICE

Charles J. Heitzman, Honolulu, Hawaii, assignor to R & H Molding, Inc., Honolulu, Hawaii

Filed Mar. 4, 1969, Ser. No. 804,249
Int. Cl. B05b *1/08, 1/34, 7/02*
U.S. Cl. 137—624.14 **13 Claims**

A device for attachment to a pressurized fluid line combining a turbine driven rotary pulsating valve and a bypass for

delivering respectively a pulsating and a steady flow to an outlet, with a control valve in the deliveries of the pulsating



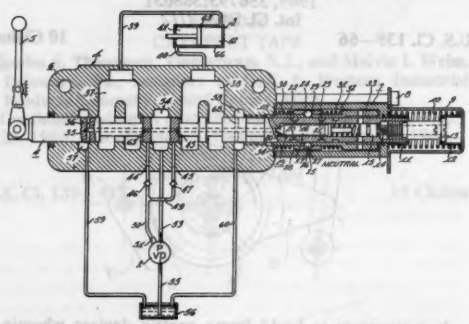
valve and bypass for selectively controlling the flows therefrom.

3,568,717

HYDRAULIC VALVE DETENT MECHANISM

John R. Plate; George A. Van Den Heuvel, Milwaukee, Wis., and James R. McBurnett, Still Water, Okla., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Sept. 15, 1969, Ser. No. 858,035
Int. Cl. F15b *15/26;* F16k *35/00*
U.S. Cl. 137—624.27 **10 Claims**



A hydraulic valve having a detent mechanism engaging the valve to releasably retain the valve in an open position and hydraulically release the valve to automatically return to a normally neutral position in response to a predetermined pressure in the system.

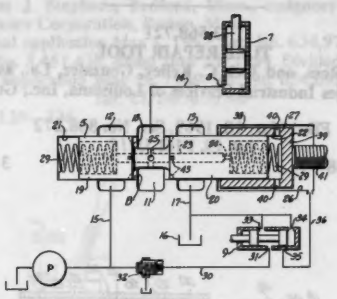
3,568,718

PILOT OPERATED CONTROL VALVE

Raud A. Wilke, Brookfield, and Francis H. Tennis, Oconomowoc, Wis., assignors to Koehring Company, Milwaukee, Wis.

Filed Feb. 17, 1969, Ser. No. 806,340
Int. Cl. F16k *11/07;, 31/38*
U.S. Cl. 137—625.6 **14 Claims**

Admittance of pressurized control fluid into a first chamber at one end of a valve spool while a second chamber at the other end of the spool is vented, effects actuation of the valve spool in one direction from neutral to an operating position allowing pressure fluid to flow from one passage to another at a rate determined by the distance the spool is displaced from neutral. Such displacement is halted when the spool effects closure of a vent in the second chamber. The position of the valve spool at the time the vent is closed is predeterminable so as to provide for stopping of the valve



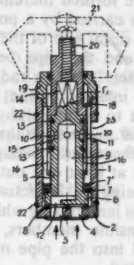
spool at any of a number of metering positions restricting fluid flow from said one passage to the other.

3,568,719

MIXING UNIT FOR FAUCETS

Marsilio Bonomi, Via G. Prati 6, Brescia, Italy

Filed Mar. 24, 1969, Ser. No. 809,697
Claims priority, application Italy, Mar. 26, 1968, 2732A/68
Int. Cl. F16k *19/00*
U.S. Cl. 137—636.4 **10 Claims**



A mixing unit for two different fluids includes an angularly, but not axially movable member for selectively discharging either one or both fluids. The mixing unit may be used in a faucet having a sleeve that is axially movable between open and closed positions.

3,568,720

CLAMPING DEVICE FOR SEALING AND CLAMPING HEADS

Karl-Hans Staat, Homberg; Theodor Zacharias, Krefeld, and Horst Lubke, Hilden, Germany, assignors to Friedrick Kocks

Filed Feb. 14, 1969, Ser. No. 799,344
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **6 Claims**

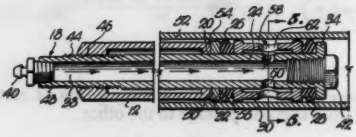
A sealing clamp is provided for one-sided holding and closing of hollow articles such as pipe consisting of a cylindrical elastic sealing sleeve and an elastic cylindrical clamping part

arranged at the inner circumference of this sleeve and made of harder material in the form of spaced bars held apart by spring force acting in at least one axial recess in each bar.

3,568,721
TUBE REPAIR TOOL

Robert J. Ross, and Jack C. Kelley, Gonzalez, La., assignors to Reintjes Industrial Services of Louisiana, Inc., Gonzales, La.

Filed Mar. 18, 1969, Ser. No. 808,272
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 **3 Claims**

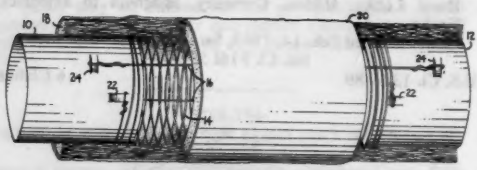


A tool for repairing graphite tubes of the type used in bundles in chemical processing equipment such as heat exchangers, without the necessity of removing the tube from the piece of processing equipment, the tool comprising an elongated, hollow sleeve insertable within the tube to be repaired; a pipe extending longitudinally of the hollow sleeve and having a central passage formed therein; a pair of spaced-apart expansible members carried by a portion of the pipe which extends beyond the distal end of the sleeve when the tool is in use; the sleeve and the pipe being relatively rotatable whereby said members may be radially expanded into engagement with the interior of the tube to be repaired to cooperate therewith to define a chamber. The pipe is provided with a nipple at one end so that adhesive material may be introduced into the central passage thereof and the other end of the pipe has at least one outlet hole formed therein, the outlet hole being in selective communication with openings formed in a lantern ring which is carried by the pipe between said expansible members, in order that adhesive material introduced into the pipe may be delivered against the tube to be repaired.

3,568,722
LONGITUDINALLY REINFORCED FLEXIBLE DUCT

William L. Runshe, and Clarence H. Helbing, Shelbyville, Ind., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 17, 1968, Ser. No. 760,171
Int. Cl. F16l *11/02*
U.S. Cl. 138—133 **10 Claims**

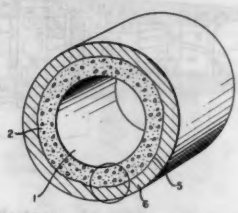


A flexible insulated duct comprising a wire helix wrapped with insulating material, encased in a fluid-impermeable sleeve and terminated with longitudinally reinforced connector members. The longitudinal reinforcement consists of cordlike tension means affixed to the connector members to enhance the axial tensile strength of the duct while maintaining its flexibility, i.e., its bendability and twistability.

3,568,723
METAL-CERAMIC COMPOSITE STRUCTURES

Donald Maurice Sowards, Ashbourne Hills, Claymont, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed June 23, 1967, Ser. No. 648,332
Int. Cl. F16l *9/14*
U.S. Cl. 138—143 **5 Claims**

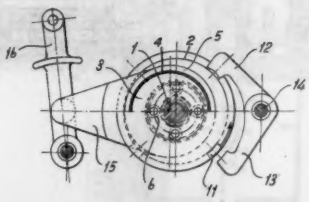


Metal-ceramic structures are made by casting molten metal around ceramic cores having specific physical properties. Most important of these properties is that the surface of the core which forms part of the metal-ceramic interface must have a porosity of between 20 and 80 percent and the porosity created by a multiplicity of uniformly distributed pores ranges from 25 to 2500 microns in size.

3,568,724
HEALD FRAME CONTROL DEVICES

Sergio S. Xaus, Street No. 33 Legalidad, Barcelona, Spain

Filed July 14, 1969, Ser. No. 841,486
Claims priority, application Spain, July 17, 1968, June 4, 1969, 356793;368031
Int. Cl. D03c *1/12*
U.S. Cl. 139—66 **10 Claims**



Improvements in heald frame control devices wherein a toothed driving shaft is meshed with planetary pinions of similar diameter mounted on a disc. The pinions are meshed with an interiorly toothed eccentric which actuates by its smooth exterior a flange that carries a projecting appendice articulated to the corresponding oscillatory driving lever of the heald frame. The disc and eccentric are selectively retained by the respective extremities of a cranked control lever which is oscillatable about its vertex. The eccentric and flange cause a relative reciprocating movement that is transmitted to the driving lever of the heald frame whereby the control lever undergoes a movement of displacement from its articulation point that graduates the opening of the shed.

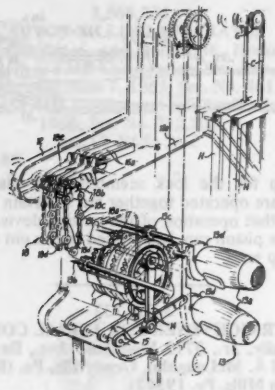
3,568,725
DOBBIES

Thomas Hindle, and Vincent Pinder Banks, Blackburn, Lancashire, England, assignors to Hindle, Son and Company Limited, Blackburn, Lancashire, England

Continuation-in-part of application Ser. No. 694,129, Dec. 28, 1967, now abandoned. This application Aug. 8, 1969, Ser. No. 848,632
Int. Cl. D03c *1/00*; D03d *51/20*
U.S. Cl. 139—76 **10 Claims**

The present invention concerns a loom dobby with a multiplicity of jack levers operating healds or shuttle drop boxes, each lever being moved back and forth by its own electric

motor and a crank mechanism, and there is electrical control means to stop the jack levers automatically in positions for

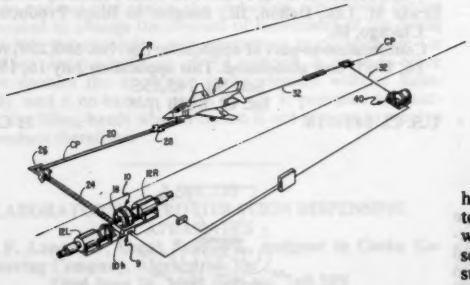


the insertion of weft picks in accordance with a preselected pattern to be produced on the finished fabric.

3,568,726
CATAPULT TAPE

Charles S. Thompson, Vincentown, N.J., and Melvin I. Weiss, Delaware, Pa., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Continuation-in-part of application Ser. No. 575,113, Aug. 25, 1966, now abandoned. This application Dec. 10, 1968, Ser. No. 795,379
Int. Cl. D03d *11/00*
U.S. Cl. 139—415 **15 Claims**

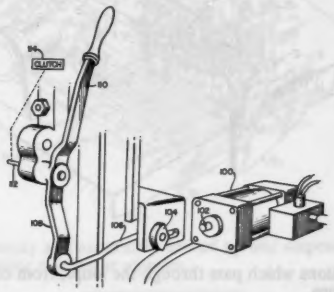


This disclosure pertains to a solid woven tape considerably wider than it is thick so as to permit coiling upon a rotatable reel of the type used in aircraft launching or recovery gear. The tape is constructed of a plurality of longitudinally extending load bearing strands which are bound together by transverse strands. The transverse strands are composed of a material having a higher initial modulus than the longitudinal strands so that lateral bulging of the tape is minimized when it is subjected to compressive forces in being wound upon a reel.

3,568,727
LOOM STOPPING SYSTEM

Leon G. Wilde, Andover; Albert Szczur, New Bedford, and William J. Stephens, Bedford, Mass., assignors to H. F. Livermore Corporation, Boston, Mass.

Original application May 1, 1967, Ser. No. 634,978, now Patent No. 3,451,438, dated June 24, 1969. Divided and this application June 19, 1969, Ser. No. 834,692
Int. Cl. D03d *51/00*
U.S. Cl. 139—336 **1 Claim**

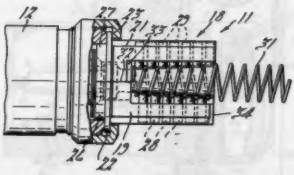


A disabling system responsive to a loom malfunction is provided for disengaging the drive clutch prior to stopping the lay whereby the loom is brought to a halt in a smoother and more controlled manner than is possible with conventional looms.

3,568,728
WIRE COILING TOOL

William O. Mueller, Detroit, Mich., assignor to Hans Sickinger Co., Pontiac, Mich.

Continuation-in-part of application Ser. No. 700,786, Jan. 26, 1968, Patent No. 3,520,334. This application Dec. 6, 1968, Ser. No. 789,636
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.94 **1 Claim**



A wire coiling tool for spiral wire binders comprising split hollow body halves each of which has a series of inwardly extending pins, the facing pin sets being offset by one-half the wire pitch. In a second embodiment, each body half has two sets of pins, the four sets of pins being spaced apart 90° and successive pins around the circumference being offset by one-quarter the wire pitch.

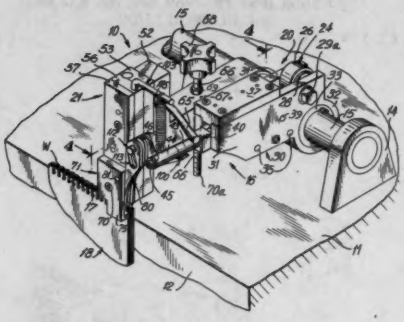
3,568,729
DEVICES FOR CLIPPING AND LOOPING ENDS OF HELICAL BINDERS

Albert Freundlich, Bronx, and Nicholas M. Diakoff, Astoria, N.Y., assignors to Freundlich-Gomez Machinery Corp., College Point, N.Y.

Filed Apr. 14, 1969, Ser. No. 815,821
Int. Cl. B21f *35/02*
U.S. Cl. 140—103 **22 Claims**

Devices positioned at the ends of a helical coil binder threaded through openings in a notebook or pad, clip the ends of the binder, then bend the clipped ends longitudinally

inwardly around the outside of adjacent convolutions of the binder and then loop portions of the inwardly bent ends radially inwardly beneath and inside of said adjacent convolutions and then bend the ends longitudinally outwardly to form loops, and close the loops sufficiently to prevent the



wire portions which pass through the loops, from coming out of the loops.

These devices each include a first member carrying a clipper, a second member carrying a bending cam, a third member carrying a looping cam, and a single control element to activate all these three members, successively.

3,568,730

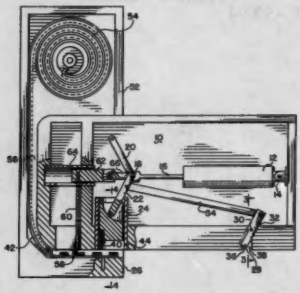
METHOD OF SPLICING

Jimmy C. Ray, Rte. 2, Box 33, Denison, Tex.

Original application Feb. 7, 1966, Ser. No. 525,506. Divided and this application June 25, 1969, Ser. No. 836,277

Int. Cl. B21f *15/06*

U.S. Cl. 140—111 **8 Claims**



Connectors are attached to a paper tape in pairs. The tape is fed into a machine and wires are inserted into the connectors. Four wires are selected, arranged in two pairs and sheared so that the ends are even and then are inserted, two each into the two connectors. Thereafter, the connectors are crimped, electrically connecting the wires together.

3,568,731

TOOL FOR BINDING CABLE HARNESSES

Heinrich Kabel, Quickborn, Holstein, Germany, assignor to Paul Hellermann GmbH, Pinneberg, Germany

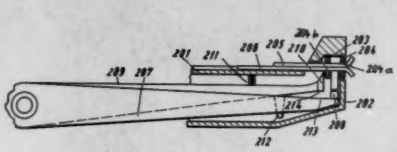
Filed Nov. 4, 1968, Ser. No. 773,161

Claims priority, application Germany, Nov. 14, 1967, P 16 40 414.1

Int. Cl. B21f *15/06*

U.S. Cl. 140—117 **3 Claims**

Cable assemblies are to be bound by a strap the ends of which enter a slot in a lock member and are retained therein by a pin pushed through a bore transversely of the slot and held in place by deformation. The improved appliance for fixing the lock members comprises a piston ram for pushing the pin into the bore, and a cutting device which cuts off the projecting strap ends and which in its rest position acts as a



locating stop for the lock member. The piston ram and cutting ram are operated together but a certain lost motion is provided so that operation of the cutting device commences only after the piston ram has pushed in the pin sufficiently to hold the strap ends.

3,568,732

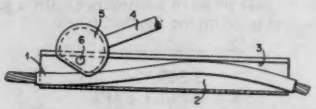
SPLICE STRAIGHTENER FOR AERIAL CONDUCTORS

James A. Kelly, Jr., 3712 Woodland Ave., Drexel Hill, Pa., and Daniel A. McLaughlin, Gradyville, Pa. (Box 17, Valley Road, Glen Mills, Pa. 19342)

Filed Feb. 28, 1969, Ser. No. 803,380

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 **5 Claims**



An apparatus is disclosed comprising a U-shaped channel with fulcrum ledges running the length of same, which is engaged about a bent splicing sleeve, and a lever cam with handle, with which a straightening force is applied. The lever cam, when inserted into the channel, cooperates with the fulcrum ledges in transmitting a straightening force applied to the splicing sleeve.

3,568,733

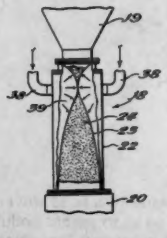
METHOD AND APPARATUS FOR FILLING BAGS

Erwin M. Lau, Dolton, Ill., assignor to Black Products Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 660,259, Aug. 14, 1967, now abandoned. This application July 16, 1968, Ser. No. 745,155

Int. Cl. B65b *1/18*

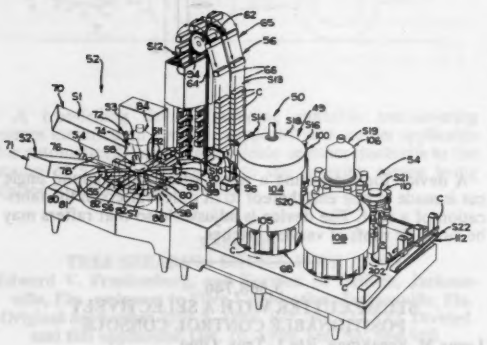
U.S. Cl. 141—10 **11 Claims**



A bag-filling machine has a flexible sleeve extending from the supply bin to the feed hopper. The feeding action is obtained by squeezing the sleeve to force the charge of powdered material contained therein downwardly through the feed chamber and a communicating spout into a bag hung on the spout. A casing surrounds the flexible sleeve. Air under pressure is introduced into the space between the casing and

the sleeve to squeeze the sleeve. In a modification, the sleeve is squeezed by rollers. When a given weight of material has been fed into the bag, a scale mechanism trips and shuts off further flow of material through the spout by means of a pinch valve behind the spout, and terminates the squeezing action.

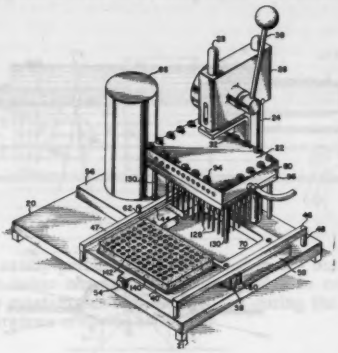
3,568,734
CARTON-FILLING APPARATUS
Leslie Vadas, Los Gatos, and Robert W. Drake, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.
Original application June 7, 1965, Ser. No. 461,738, now Patent No. 3,456,419. Divided and this application Mar. 11, 1968, Ser. No. 712,203
Int. Cl. B65b *3/12*
U.S. Cl. 141—89 **7 Claims**



Carton-filling apparatus which is adjustable to handle cartons of different sizes and includes a plurality of reciprocable filling heads each having a filling tube and foot valve movable into and out of a carton. An in-motion adjustment device is provided to change the amount of movement of the filling tube while the apparatus is in operations to compensate for overfilling and underfilling of the cartons. A clean-in-place device enables the apparatus to be cleaned without disassembly, and a no-carton, no-fill device is provided to deactivate the filling heads when a carton is not present to receive the product therefrom.

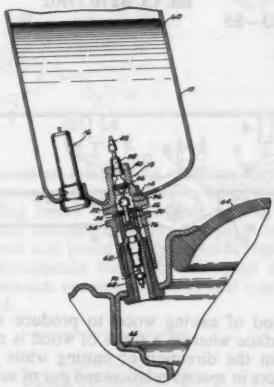
3,568,735
LABORATORY MICROTITRATION DISPENSING APPARATUS
Jesse F. Lancaster, Great Falls, Va., assignor to Cooke Engineering Company, Alexandria, Va.
Filed June 26, 1968, Ser. No. 740,289
Int. Cl. B65b *3/30;* **B01j** *4/02*
U.S. Cl. 141—238 **11 Claims**

Laboratory dispensing apparatus including a base, a liquid reservoir and well assembly mounted on the base, and a microtitration plate carrier device mounted on the base for horizontal movement between a forward retracted position and a rearward operative position overlying a portion of the well. A novel vertically movable dispensing assembly is positioned above the base in operative alignment with the portion of the liquid well so that with the carrier in the forward retracted position the dispensed assembly may withdraw microquantities of liquid from the well and then dispense the same into the microtitration plate wells when the carrier is moved to the rearward position. The dispensing unit includes a novel pump piston actuator assembly and pneumatic control system which enable microquantities of liquid to be



simultaneously and accurately picked up and dispensed from the dispensing needles or pipettes.

3,568,736
PORTABLE INFLATOR
Richard E. Linch, Chilton, Wis., and Ralph K. Boyer, Roxboro, N.C., assignors to Western Industries, Inc., Milwaukee, Wis.
Filed Aug. 30, 1967, Ser. No. 664,466
Int. Cl. B65b *1/04, 3/04;* **B67c** *3/28*
U.S. Cl. 141—349 **5 Claims**

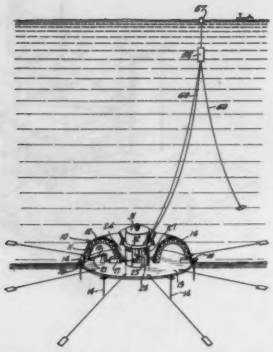


A portable container housing compressed gas and having valve means for automatically transferring the contents of the container directly to a vehicle tire or similar device requiring inflation upon coupling the container valve means to the valve of the tire or other device.

3,568,737
OFFSHORE LIQUID STORAGE FACILITY
Robert B. Burns, Huntington, N.Y., assignor to Texaco Development Corporation
Filed Oct. 23, 1968, Ser. No. 769,777
Int. Cl. B65b *3/00;* **B67c** *3/00*
U.S. Cl. 141—383 **8 Claims**

The invention relates to an oil or liquid storage facility positioned at an offshore location in a relatively deep body of water and adapted for remote operation. The facility includes a main oil storage tank which is communicated with, and

supplied by a plurality of satellite wells or smaller feeder tanks. A transfer tank is adapted for removable connection with the main tank to be periodically filled with oil stored in the latter. At predetermined intervals, the filled transfer tank



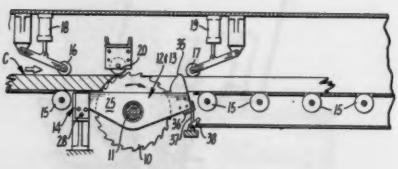
is disconnected from the main tank, elevated to the surface of the water for removal, and replaced by an empty tank. The latter is then lowered to the main tank beneath the ocean surface where it is automatically connected to the main tank for continuing the filling operation.

3,568,738

APPARATUS FOR SAWING WOOD TO PRODUCE SMOOTH ROTARY PLANED SURFACES

Elbridge W. Thrasher, Ukiah, Calif., assignor to Masonite Corporation

Filed Jan. 17, 1969, Ser. No. 791,930
Int. Cl. B27b *11/02*
U.S. Cl. 143—55 13 Claims



A method of sawing wood to produce a smooth rotary planed surface wherein a piece of wood is moved into a rotary saw in the direction of cutting while maintaining the sawed pieces in spaced relation and out of substantial contact with the back edge of the saw by shifting a splitter transversely in response to lateral transverse deflections of the saw.

A rotary saw machine having a pair of saw guides disposed on opposite sides of a saw blade mounted for axial movement upon a saw arbor, each saw guide comprising a wear member that is flexibly and resiliently supported for movement in a direction substantially parallel to the axis of blade rotation, each wear member having a surface that is maintained in contact with the side surface of the saw blade under a resilient preload force that urges the saw blade against the other wear member to rigidify the saw blade and maintain the blade in a predetermined cutting plane.

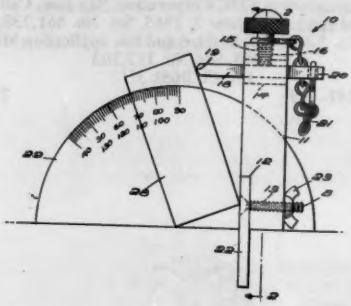
A rotary saw machine having a pair of saw guides disposed on opposite sides of the saw blade mounted for axial movement upon a saw arbor, means for yieldably supporting the saw guides for movement in a direction substantially parallel to the axis of blade rotation, and a splitter disposed adjacent the back edge of the saw blade and mounted to said support means, said splitter being free to move laterally in a direction substantially parallel to the axis of blade rotation in response to transverse deflections of the saw blade.

3,568,739

RAFTER GAUGE

Chester E. Kirk, Corvallis, Oreg., assignor to Speed Cut Inc., Corvallis, Oreg.

Filed Feb. 25, 1969, Ser. No. 802,154
Int. Cl. B27b *27/06*
U.S. Cl. 143—170 2 Claims



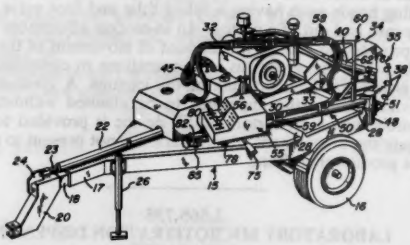
A device for supporting a rafter while a compound angle cut is made at one end thereof to fit other rafters in the fabrication of a roof. The device is adjustable so that rafters may be cut to fit roofs of varying pitches.

3,568,740

STUMP CUTTER WITH A SELECTIVELY POSITIONABLE CONTROL CONSOLE

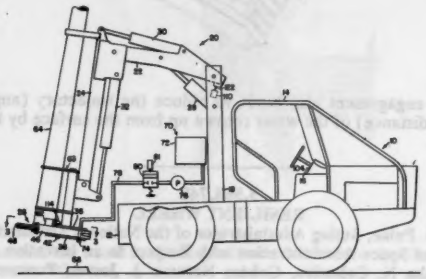
Leroy M. Speakman, Rte 1, Troy, Ohio

Filed Jan. 28, 1969, Ser. No. 794,661
Int. Cl. A01g *32/06*
U.S. Cl. 144—2 8 Claims



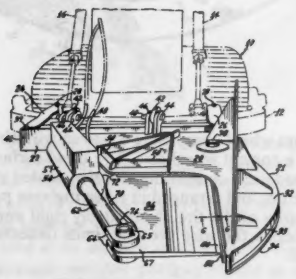
A stump cutter incorporates a portable wheel supported frame having a telescopic tongue, and a carriage is mounted on the frame for lateral movement. An engine is mounted on the carriage for driving a circular cutting disc which is supported by a housing pivotally mounted on the carriage for vertical movement. The movements of the tongue, carriage and cutting disc are effected by corresponding hydraulic cylinders connected by flexible lines to corresponding control valves mounted on a control console. An arm supports the console and is pivotally connected to the frame for movement of the console between a retracted position adjacent the frame and selectable extended positions in laterally spaced relation to the cutting disc.

3,568,741
COMBINED TREE FELLER AND FUNGICIDE APPLICATOR
Robert Herrick Wilkinson, and Merriam Lee Gustafson, Balcarce Buenos Aires, Argentina, assignors to Deere & Company, Moline, Ill.
Filed July 31, 1969, Ser. No. 846,482
Int. Cl. A01g 23/02
U.S. Cl. 144—3 13 Claims



A tree-felling device including shiftable tree-severing means mounted on a mobile support frame and an applicator for automatically applying fungicide or other materials to the stump of a tree in response to the severing means being shifted to a preselected position.

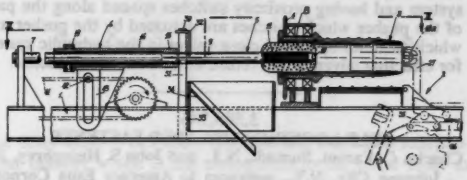
3,568,742
TREE SHEARING DEVICE WITH ANVIL
Edward V. Frankenberg, and Norman N. Griffith, Jacksonville, Fla., assignors to Fleco Corporation, Jacksonville, Fla.
Original application May 9, 1968, Ser. No. 727,853. Divided and this application Oct. 16, 1969, Ser. No. 866,950
Int. Cl. A01g 23/02
U.S. Cl. 144—34 2 Claims



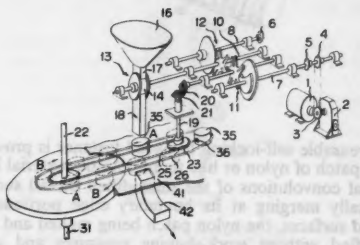
An improved tree shear device having a cutting blade pivotally mounted on a frame and powered by a cylinder and piston against an anvil which is removably attached to the frame so that the anvil can be properly shimmed to meet the cutting edge of the blade upon initial installation and after sharpening of the cutting edge.

3,568,743
CORING DEVICE FOR PINEAPPLE SIZING MACHINES
Raoul Dulieu, Les Chesnez (Yonne), France
Filed Jan. 21, 1969, Ser. No. 792,688
Claims priority, application France, July 3, 1968, No157,641
Int. Cl. A23n 3/12, 7/00
U.S. Cl. 146—6 6 Claims

A coring device for a machine which serves to size pineapples by means of a rotary cutter against which the fruits to be sized are thrust axially, a tubular coring cutter being mounted in substantially coaxial relation with said rotary sizing cutter on a sliding carriage to which is imparted an axial reciprocating movement. The coring cutter is essentially provided with axially parallel grooves formed in the outer surface of the cutter near the fruit-cutting edge in order to prevent any rotational motion of the fruit during the simultaneous operations of coring and sizing.

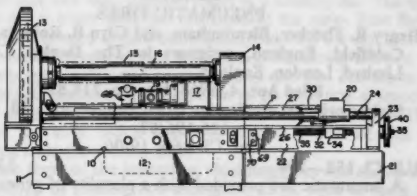


3,568,744
MACHINE FOR AUTOMATICALLY REMOVING ASTRINGENT SKINS OF PEANUTS
Keijiro Sakashita, Matsudo, and Shigenori Enokida, Tokyo, Japan, assignors to Cashew Co., Ltd., Tokyo, Japan
Filed Jan. 27, 1969, Ser. No. 794,069
Int. Cl. A23n 5/10
U.S. Cl. 146—32 1 Claim



The present invention relates to a machine for automatically removing astringent skins of peanuts which comprises a transferable peeling board having a wire netting provided with edge tools and containers having openings on the bottom forwarded onto said board and retained at regular intervals thereon, automatically removing astringent skins only from kernels of peanuts accommodated in said containers by said peeling board.

3,568,745
SLICING MACHINE
Charles H. Johnson, Madison, Wis., assignor to Oscar Mayer & Co., Inc., Chicago, Ill.
Filed June 14, 1968, Ser. No. 737,027
Int. Cl. A22c 17/02
U.S. Cl. 146—95 3 Claims



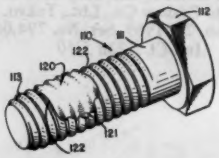
A slicing machine particularly adapted for large size bologna and similar products which may have greater than the nor-

mal length, the machine comprising a rotatably driven slicing knife disposed at the end of an elongate table on which the product is advanced by a reciprocably mounted pusher which carries a means to grip the trailing end of the product and which is reciprocated by connection with a screw which is rotated by a fluid motor forming part of a hydraulic control system and having proximity switches spaced along the path of the pusher which switches are actuated by the pusher and which switches open and close valves in the hydraulic system for effecting advance and return movement of the pusher.

3,568,746
SELF-LOCKING THREADED FASTENER

Charles C. Faroni, Summit, N.J., and John S. Humphrey, Jr., Johnson City, N.Y., assignors to Amerace Esna Corporation, New York, N.Y.

Filed Feb. 6, 1967, Ser. No. 618,263
Int. Cl. F16b *39/34*
U.S. Cl. 151—7 19 Claims



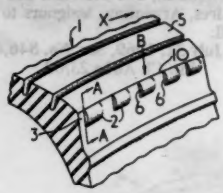
A reusable self-locking threaded fastener is provided having a patch of nylon or like thermoplastic material bonded to several convolutions of the unmodified thread surfaces and gradually merging at its boundary edge portions into the thread surfaces, the nylon patch being melted and fused and solidified without work-shaping pressures and containing from about 0.1 percent to about 5 percent by weight of molybdenum disulfide; a reusable self-sealing and self-locking fastener is provided in which the unmodified nylon patch has a circumferential extent of about 200° to about 300°; by adding to the nylon patch molybdenum disulfide the circumferential extent may be 360°; a method of forming the self-sealing and self-locking fasteners is provided wherein the heated fastener has the nylon in powdered form, and if desired the molybdenum disulfide mixed therein, dropped thereonto while the fastener rotates about its longitudinal axis to melt and hold a quantity of the nylon thereon, after which the fastener may be heated to the fusion temperature of the nylon to further melt the patch; further a primer coating of epoxy resin is provided between the patch and the fastener; the resultant fastener can be reused a minumum of five times and still retain the desired self-locking and self-sealing characteristics thereof.

3,568,747
PNEUMATIC TIRES

Henry R. Fletcher, Birmingham, and Glyn B. Roberts, Sutton Coldfield, England, assignors to The Dunlop Company Limited, London, England

Filed Apr. 4, 1968, Ser. No. 718,897
Claims priority, application Great Britain, Apr. 18, 1967, 16,196/67
Int. Cl. B60c *19/00*
U.S. Cl. 152—154 13 Claims

A pneumatic tire provided with a plurality of generally axially outwardly extending faces on at least one of its shoulder portions. The faces may engage with water standing on the surface over which the tire is to run and/or may be engaged with water thrown up from the surface. This engagement imparts a rotational effect to the tire in the manner of a turbine, which tends to reduce the slipping of the tire on the surface.

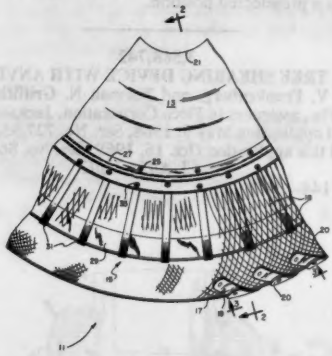


The engagement also tends to reduce the trajectory (angle and distance) of the water thrown up from the surface by the tire.

3,568,748
RESILIENT WHEEL

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration with Respect to an invention of; John N. Calandro, Goleta; Norman J. James, Panorama City, and Ferenc Pavlics, Santa Barbara, Calif.

Filed Feb. 17, 1969, Ser. No. 799,847
Int. Cl. B60c *7/06*
U.S. Cl. 152—250 6 Claims



A resilient wheel comprising a woven wire tire clamped to the rim of a conical wheel disc. The tread surface of the wire tire has tread units comprising abrasive coated strips clamped to the wire tire and arranged in a herringbone pattern around the tread area of the tire. A relatively rigid annular frame is provided inside the wire tire that limits deflection of the tire under load.

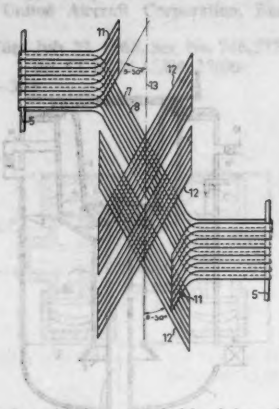
3,568,749
PNEUMATIC VEHICLE TIRE

Hans Menell, Ahlem Hannover, and Friedrich Bartsch, Hannover-Herrenhausen, Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed July 1, 1968, Ser. No. 741,714
Claims priority, application Germany, July 5, 1967, P 16 05 634.1
Int. Cl. B60c *11/00*
U.S. Cl. 152—354 1 Claim

A pneumatic vehicle tire with a carcass reinforcement of substantially parallel strength members which pass in one piece from bead to bead while forming components of rubberized cord layer means and in the tire sidewalls extend at least approximately at right angles with regard to the circumferential direction of the tire whereas in the zenith portion of said tire said strength members pass across the width of the tread strip at an angle of from 5 to 30° with regard to the tire

circumferential direction, those portions of said strength members which extend from bead to bead being looped

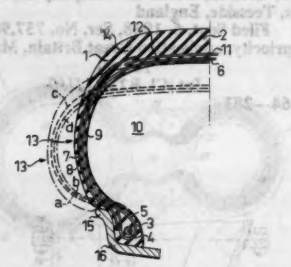


around the beads and being extended back into the shoulder areas of the tire.

3,568,750
PNEUMATIC VEHICLE TIRE

Hermann Henning, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed June 12, 1968, Ser. No. 736,336
Claims priority, application Germany, June 13, 1967, P 16 05 633.1
Int. Cl. B60c 9/06
U.S. Cl. 152—354 **8 Claims**



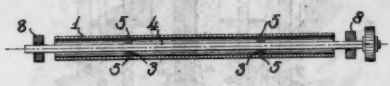
Strength members cross each other in two superimposed layers in tire sidewalls. Near tire beads adjacent to inner hollow chamber means, strength member portions extend at least nearly at right angles to tire circumferential direction; in tire sidewalls adjacent tire shoulders, these strength member portions extend at an inclined relative to tire circumferential direction. Strength member portions extend at an incline in the layer adjacent tire outer surface and in tire sidewalls adjacent to tire beads, latter strength members extend at least nearly at right angles to tire circumferential direction in sidewall area.

3,568,751
LARGE MOTION PICTURE SCREEN ROLLING-UP EQUIPMENT

Sasuke Takahashi, No. 32/11, Yasunakacha-6-chome, Yao, Osaka-Fu, Japan

Filed Dec. 17, 1968, Ser. No. 784,365
Claims priority, application Japan, Oct. 12, 1968, 43/74393
Int. Cl. A47g 05/02; A47h 01/00
U.S. Cl. 160—238 **4 Claims**

Large motion picture projection screen tubular rollup and support mechanism characterized by a rigid but lightweight hollow tubular outer shaft of screen width and a longer rigid inner supporting shaft bearing supported at opposite protruding ends and spaced centrally within the outer shaft by means of a pair of spacing support rings. The rings and the two shafts are so constructed and relatively arranged as to permit

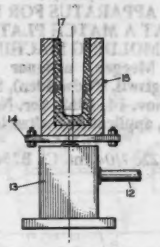


the inner shaft to flex under a supporting load in an independent manner which is not transmitted to the outer shaft to which the screen per se is attached, thereby maintaining the screen in a smooth, undistorted manner free of undesirable, abnormal light-reflecting slack or wrinkles when in the extended open screen condition.

3,568,752
METHOD FOR CONTROLLING THE AS-CAST GRAIN STRUCTURE OF SOLIDIFIED MATERIALS

Douglas C. Williams, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Dec. 5, 1968, Ser. No. 781,375
Int. Cl. B22d 13/06
U.S. Cl. 164—47 **12 Claims**



A process whereby the as-cast grain structure of metals and alloys is controlled by the application of duortical motion to a liquid metal or alloy as the liquid metal or alloy passes through the liquid-solid transition as the liquid cools.

3,568,753
PROCESS OF FABRICATING A COMPOSITE ZINC PRINTING PLATE

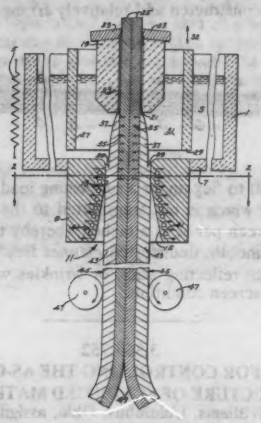
John F. Clarke, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1967, Ser. No. 691,329
Int. Cl. B22d 11/00; B41d 3/00
U.S. Cl. 164—86 **5 Claims**

In all forms of the invention at least one heat absorbing aluminum backing strip has one side prepared for bonding zinc thereto. The strip is then moved first through a pool of molten zinc and then through a slot in a cooling die. The slot in the die is wider than the thickness of the strip. Zinc from the pool is caused to flow controllably into the die slot and to freeze on the prepared face to form a zinc coating thereon as the strip approaches and passes through the die. The die is of a nonsticking short-throat type so as to produce a smooth finish on the coating before complete freezing occurs. The side of the strip which is not to receive a coat of zinc is shielded from the molten zinc.

In one form of the invention, shielding from the zinc is accomplished by placing two aluminum strips back to back as they pass through the zinc melt and the die. In another form, the back of the aluminum strip is shielded by omitting to clean that side of the strip and/or applying a suitable zinc-

repellant substance such as a film of oil or the like. In another form of the invention the back of the aluminum strip



engages part of the crucible containing the melt, to effect shielding.

3,568,754

CENTERING APPARATUS FOR MATCH PLATES ARRANGED AT A MATCH PLATE SUPPORT FOR MOLDING MACHINES

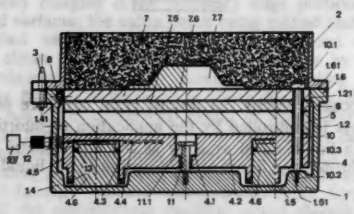
Werner Geiger, Meggen, assignor to Inventio Aktiengesellschaft, Hergiswil, (Nidwalden), Switzerland

Filed Nov. 14, 1968, Ser. No. 775,614

Claims priority, application Switzerland, Nov. 17, 1967, 16165/67

B22c 7/04 Int. Cl. B23q 3/18

U.S. Cl. 164—159 **7 Claims**



There is disclosed a centering apparatus for match plates arranged in a match plate support of a molding machine wherein the match plate or plates possess predetermined impact surfaces which are to be pressed against impact means of the match plate support. According to an important aspect of the invention there are provided pressure transmission means adapted to be operatively connected with fluid energy-supply means, such pressure transmission means being disposed between the match plate support and the surfaces of the match plate situated opposite the impact surfaces thereof.

3,568,755

MACHINE FOR THE MANUFACTURE OF ARTICLES OF A SLURRY OF SOLID MATTER IN A LIQUID

Daniel Fredrik Ednell, Ed, Sweden, assignor to Foseco Trading A.G., Chur, Switzerland

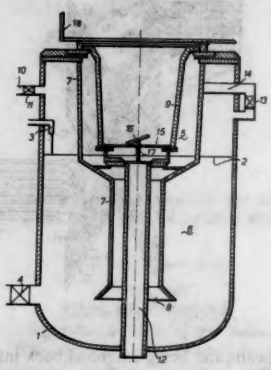
Filed May 28, 1968, Ser. No. 732,652

Claims priority, application Norway, July 3, 1967, 168914

Int. Cl. B22c 17/00

U.S. Cl. 164—165 **8 Claims**

A machine for manufacture of articles by deposition of solid matter in a slurry on a perforated mould, a pressure difference being established for forcing the liquid component through the said pressure difference being reversed to blow



off the deposited article, the blowing means being located outside the means for depositing the solid matter.

3,568,756

TUNDISH HAVING OUTLET NOZZLE COMPRISING A SWIVELLABLE TERMINAL PORTION

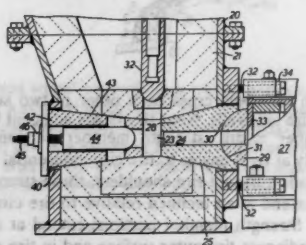
Richard James Dain, Tonbridge, Kent, England, assignor to Ashmore, Benson, Pease & Company Limited, Stockton-On-Tees, Teesside, England

Filed Sept. 6, 1968, Ser. No. 757,981

Claims priority, application Great Britain, Mar. 20, 1968, 13,450

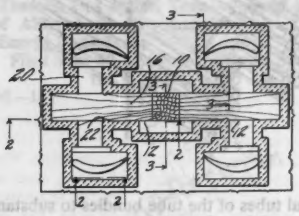
Int. Cl. B22d 11/10

U.S. Cl. 164—281 **3 Claims**



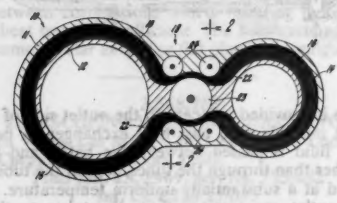
A tundish suitable for receiving molten metal to be cast continuously in a continuous casting mould has an outlet for the molten metal constituted by a nozzle the cross section of the bore of which is less than that of the cavity of the mould and a nonrigid joint is included between the outlet of the tundish and the inlet of the mould in order to permit limited inclination of the longitudinal axes of the mould and the nozzle. The part of the nozzle which defines the outlet therefrom is separate from the remainder of the nozzle and is swivellable to a limited extent with respect to the remainder of the nozzle. The longitudinal axes of the mould and the nozzle may be either substantially vertical or substantially horizontal.

3,568,757
MOLD FOR PRODUCING SINGLE CRYSTALS
Barry J. Piearcey, Galmpton, Brixham, Devon, England, assignor to United Aircraft Corporation, East Hartford, Conn.
Filed July 22, 1968, Ser. No. 746,577
Int. Cl. B22d *15/04, 25/06*
U.S. Cl. 164—353 14 Claims



The mold is intended for producing single cast crystal articles and is adapted for multiple casting having a central mold portion with lateral branches from the sides of which single crystals grow into the article molds.

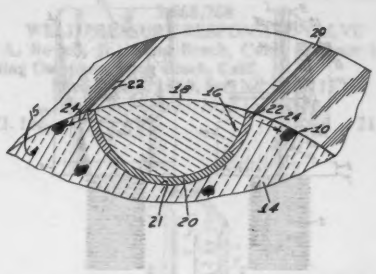
3,568,758
REGENERATIVE HEAT EXCHANGERS
Oliver K. Kelley, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 9, 1969, Ser. No. 840,275
Int. Cl. F28d *19/00*
U.S. Cl. 165—6 21 Claims



A regenerative heat exchanger has a heat exchange mass in the form of a multilayer band of thin metal sheet, preferably many turns of a single strip or sheet of metal. Sealing of the band is effected by rollers between which it passes in traversing from one fluid path to the other. The band is driven by a bevel gear engaging the margin of the band, which is formed with gear teeth. The layers of the band are compressed together where they pass through the rollers, to minimize fluid carryover from one path to the other. Elsewhere, the layers are spread apart by spring tabs struck from the metal and bearing against adjacent layers so that a free path for flow of fluid is provided between the layers.

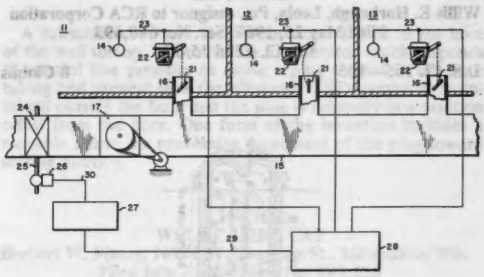
3,568,759
HEAT EXCHANGER FOR A GAS TURBINE ENGINE
Joab J. Blech, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 4, 1969, Ser. No. 855,175
Int. Cl. F28d *19/00*
U.S. Cl. 165—8 5 Claims

Solid ceramic plugs are cemented into axial grooves at the periphery of a ceramic regenerator core with a cement having a high coefficient of thermal expansion. The thermal expansion of the cement exerts forces on the rim portion of the regenerator core to counteract tensile stresses in the rim portion caused by expansion of the core interior. A foam cement



having low thermal expansion can be used on the inner area of the plug and high expansion cement can be used only on the outer area.

3,568,760
OPTIMIZATION SYSTEM
Joseph E. Hogel, River Grove, Ill., assignor to Honeywell Inc, Minneapolis, Minn.
Filed Mar. 18, 1969, Ser. No. 808,161
Int. Cl. G05d *23/185*; F24f *3/08*
U.S. Cl. 165—22 17 Claims

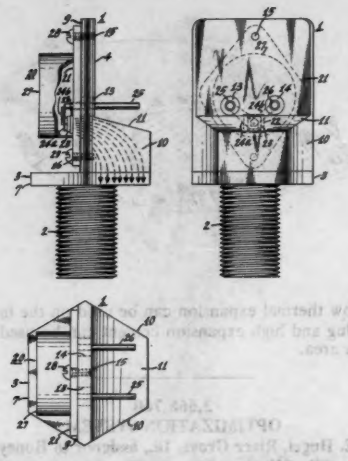


A pneumatic system for controlling the temperature of a plurality of zones in an optimum manner. Each zone has a thermostat that controls a damper within the zone to regulate the flow of conditioned air to the zone. The output of each thermostat is connected to a pressure selector, and the pressure signal representing the greatest deviation from the desired condition in a zone is transmitted to an optimizing relay that controls the conditioned air temperature. The relay is constructed and arranged so that in a warm air system the conditioned air temperature is not increased until the damper in the zone of greatest deviation has reached a maximum flow position.

3,568,761
SEMICONDUCTOR MOUNTING ADAPTER
Robert Steven Berger, Edison, N.J., assignor to RCA Corporation
Filed May 20, 1969, Ser. No. 826,239
Int. Cl. H01l *1/12*
U.S. Cl. 165—80 8 Claims

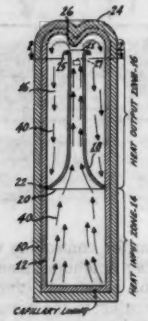
A semiconductor mounting adapter comprising a base member joined to a threaded stud, and a support member joined to the base member. The support member has a

mounting surface, a thick region adjacent to the base member which provides good heat dissipation characteristics,



and means for mounting an encapsulated semiconductor device onto the mounting surface.

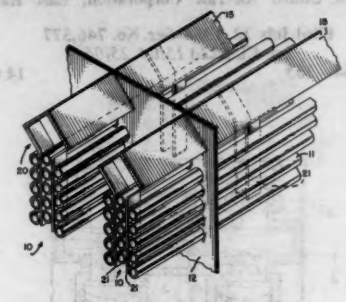
3,568,762
HEAT PIPE
Willis E. Harbaugh, Leola, Pa., assignor to RCA Corporation
Filed May 23, 1967, Ser. No. 640,693
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **8 Claims**



A heat pipe in which a vapor duct is mounted in the heat output zone to separate the vaporized working medium from the capillary walls of the heat output zone while the vapor is moving in a direction opposite to fluid capillary motion in the walls.

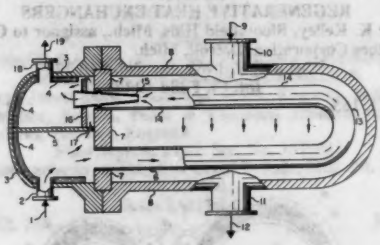
3,568,763
PROTECTIVE DEVICE FOR CONDENSER TUBES
Robert J. Stoker, Phillipsburg, N.J., and Donald A. Halpin, Easton, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.
Filed Feb. 26, 1969, Ser. No. 802,441
Int. Cl. F28b *1/02*; F28f *13/06*
U.S. Cl. 165—110 **9 Claims**

A protective device for the condenser tubes of a steam surface condenser. A baffle arrangement prevents direct impingement of high velocity against the tube bundles closest to the condenser inlet. Legs extend from the baffle between



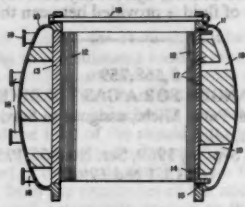
the individual tubes of the tube bundles to substantially dampen vibrations of the tubes.

3,568,764
HEAT EXCHANGER
Daniel J. Newman, Jackson Heights; Louis A. Klein, Flushing, and Richard T. Britt, Elmont, N.Y.
Filed Sept. 5, 1969, Ser. No. 855,586
Int. Cl. F28f *9/02*
U.S. Cl. 165—134 **12 Claims**



A baffle is provided adjacent to the outlet side of the tube sheet of a multiple tube pass heat exchanger. A portion of the input fluid is passed between the baffle and the tube sheet, rather than through the tubes, so that the tube sheet is maintained at a substantially uniform temperature. Ferrules pass the outlet gas portions from the tubes to the outlet chamber of the channel.

3,568,765
PLATE-TYPE HEAT EXCHANGER
Otto Konrad, Schriesheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Nov. 18, 1968, Ser. No. 776,428
Int. Cl. F28f *3/00*
U.S. Cl. 165—166 **5 Claims**



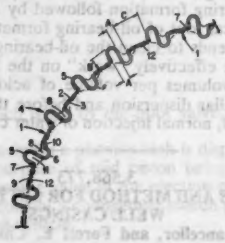
A plate-type heat exchanger for fluids, comprising a deck of separate plates with sealing means between adjacent plates

which is compressed by two end pieces, each of these end pieces having the form of a short cylindrical shell with a domed end and the compressive forces being applied to the deck of plates by means of an end plate arranged in one of the end pieces and hydraulically movable in the direction of the longitudinal axis of the deck of plates.

3,568,766
CORRUGATED HEAT EXCHANGE MEMBER FOR EVAPORATION AND CONDENSATION

David G. Thomas, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 11, 1969, Ser. No. 806,169
Int. Cl. F28f *1/42*
U.S. Cl. 165—181 8 Claims

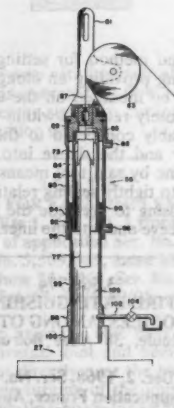


An improved heat exchange member having an evaporating surface on one side and a condensing surface on the opposite side is provided. The improved heat exchange member is fabricated of thin sheet material formed with spaced-apart longitudinally extending corrugations which draw condensate from the condensing surfaces and feed liquid to the evaporating surfaces between corrugations as a result of surface tension effects. The heat exchange member and corrugations therein are designed to operate in a vertical inclination to facilitate liquid flow along the corrugations. A thin film of liquid is maintained on the condensing and evaporating surfaces between corrugations with a resulting increase in the overall heat transfer coefficient. The heat exchange member may assume tubular as well as flat platelike configurations.

3,568,767
TELESCOPING WIRELINE LUBRICATOR

Folker H. Weiss, Los Altos, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 23, 1969, Ser. No. 793,482
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 3 Claims

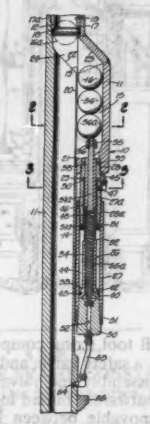


A telescoping wireline lubricator is provided with first and second telescopically extendable tubular sections so that the lubricator is especially adapted for conducting wireline operations in a closely confined area such as an underwater wellhead installation.

3,568,768
WELL PRESSURE RESPONSIVE VALVE

Cliva A. Rowell, Jr., Long Beach, Calif., assignor to Cook Testing Company, Long Beach, Calif.

Filed June 5, 1969, Ser. No. 830,719
Int. Cl. E21b *33/10*; F16k *17/34*
U.S. Cl. 166—72 21 Claims

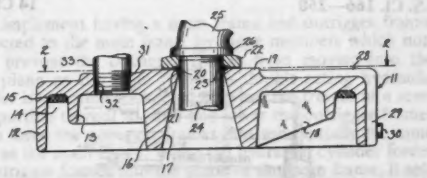


A subsurface valve to control the flow of fluid in the bore of the well tubing. The valve has an operator which responds to control line pressure to cause a plug to seat in the bore tubing and prevent flow therethrough. The operator is maintained outside the bore and the plug is normally in a position offset from the bore. One form of the invention includes a movable sleeve for preventing movement of the plug toward seating position.

3,568,769
WELL CASING CAP

Herbert W. Maass, 10940 W. Congress St., Milwaukee, Wis.

Filed July 7, 1969, Ser. No. 839,235
Int. Cl. E21b *33/03*
U.S. Cl. 166—88 7 Claims



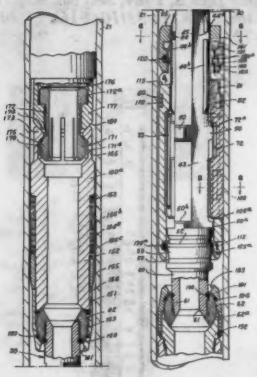
The cap has a circular flange, has a depending circular rib spaced inwardly from the flange to provide a circular gasket-receiving groove to fit over the upper end of the well casing, and has a central depending boss connected by radial ribs with the circular rib, the boss having a downwardly and outwardly flared central hole which can be bored to a required well pipe size. On the top of the cap there is an annular groove to receive an O-ring surrounding the discharge pipe, and there is a washer which has a complementary groove for receiving the upper portion of the O-ring, the discharge pipe having a shouldered portion above the washer whereby the weight of the piping and submersible pump tend to produce a self-seal around the discharge pipe and a self-seal on the upper edge of the well casing.

3,568,770

LATCH DEVICE FOR SUPPORTING WELL TOOLS IN A FLOW CONDUCTOR

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed May 22, 1969, Ser. No. 826,926
Int. Cl. E21b *33/16, 23/00*
U.S. Cl. 166—153 **21 Claims**



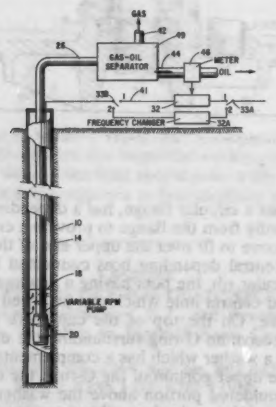
An articulated well tool string comprising a piston power unit, a seal assembly, a safety valve, and a latch for releasably supporting the seal assembly and valve in a flow conductor. The latch includes outwardly biased locking keys supported around a mandrel movable between key-locking and key-releasing positions. During upward movement of the latch in the flow conductor the mandrel shifts upwardly to a key-locking position when the keys expand into a locking recess and engage a downwardly facing shoulder. The train is pumped into and out of the flow conductor by means of the piston which is returned to the surface after installing the latch. The latch and related tools may also be installed by wireline techniques.

3,568,771

METHOD AND APPARATUS FOR LIFTING FOAMING CRUDE BY A VARIABLE RPM SUBMERSIBLE PUMP

Renic P. Vincent, and Eldon L. Drake, Tulsa, Okla., assignors to Borg-Warner Corporation, fractional part interest to each and Pan American Petroleum Corporation, fractional part interest to each

Filed Apr. 17, 1969, Ser. No. 817,090
Int. Cl. E21b *43/00, 47/06;* **F04d** *27/00*
U.S. Cl. 166—250 **14 Claims**



Many oil wells, especially in their latter stage of primary or secondary recovery, produce foamy crude oil. This crude oil will vary from mostly liquid to mostly foam. Pumping such a fluid is rather difficult. The main difficulty is due to reduced bulk density of the fluids. Thus, a constant r.p.m. submersible centrifugal pump has very low efficiency. This invention controls the r.p.m. as a function of the bulk density of the crude in the well bore. Various means of obtaining this are given.

3,568,772

WELL STIMULATION WITH MICELLAR DISPERSIONS

William B. Gogarty, Littleton, Colo., and Walter B. Kirk, Jr., Robinson, Ill., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 25, 1969, Ser. No. 861,160
Int. Cl. E21b *43/22, 43/27*
U.S. Cl. 166—273 **25 Claims**

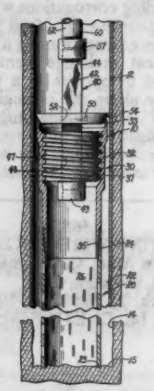
The injectivity index of injection wells is increased by injecting 1—500 gallons of a micellar dispersion per vertical foot of oil-bearing formation followed by 1—500 gallons of acid per vertical foot of oil-bearing formation. The micellar solution also tends to clean the oil-bearing sand so that the acid can more effectively "work" on the formation. Water, e.g. 0.5—50 volumes per volume of acid, can be injected after the micellar dispersion and before the acid. After the acid is injected, normal injection of water can be continued.

3,568,773

APPARATUS AND METHOD FOR SETTING LINERS IN WELL CASINGS

Robert O. Chancellor, and Forest E. Chancellor, P.O. Box 5578, Bakersfield, Calif.

Filed Nov. 17, 1969, Ser. No. 877,095
Int. Cl. E21b *43/10*
U.S. Cl. 166—315 **7 Claims**



An apparatus and method for setting a production liner within a well casing providing an elongated tubular setting sleeve adapted to be mounted on the upper end of such a liner and to be loosely received within the casing including tool means releasably connected to the sleeve for initially lowering the liner and the sleeve into the casing and expander means borne by said tool means effective radially to flare the sleeve into tightly sealing relation against the inner diameter of the casing to preclude the passage of sand and the like past the sleeve and into the liner.

3,568,774

AUTOMATIC FIRE-EXTINGUISHING DEVICE FOR AUTOMOBILES, AMONG OTHER USES

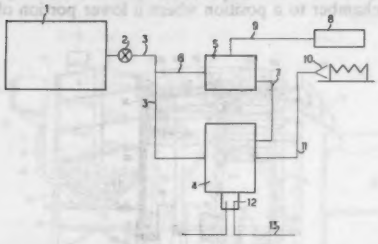
Andre Michel Meoule, 38 Allee Boiron, Pessac (Gironde), France

Filed Dec. 2, 1968, Ser. No. 780,330
Claims priority, application France, Apr. 25, 1968, 149497
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 **5 Claims**

Automatic fire extinguishing device for automobiles, among other uses, whose feeding of ejection parts or nozzles-

—from the extinguishing fluid container— is controlled by a main valve that is controlled by at least one pilot valve actuated by a heat detector, making it possible to stop immediately any fire breaking out and, consequently, to avoid the entire burning of the vehicle.

The fluid used for the control of the main valve, the control pressure of which is set by the pilot valve, is the extinguishing fluid.

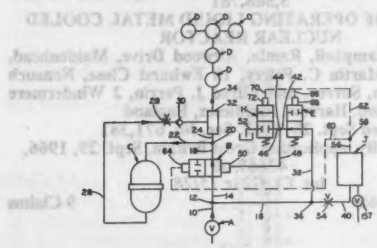


The main valve includes a piston which is displaced by the control fluid, the purpose of said piston being on the one hand to open the feeding valve of the ejection parts, and, on the other hand, to control a changeover switch placed in the electric circuit of the vehicle.

3,568,775
FIRE PROTECTION SYSTEM WITH HYDRAULICALLY TIMED DISCHARGE

Simon Greenberg, Worcester, and Donald R. Tremblay, Oxford, Mass., assignors to Gulf & Western Precision Engineering Company, Manchester, Conn.

Filed Nov. 27, 1968, Ser. No. 779,477
Int. Cl. A62c *37/06*
U.S. Cl. 169—20 **4 Claims**



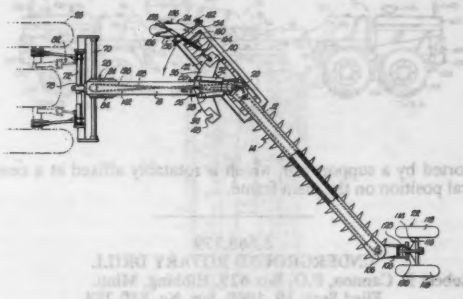
A fire protection system with hydraulically timed discharge includes timing means operated by flow of a predetermined volume of liquid to send a signal for cutting off flow of liquid to the main fire protection system.

3,568,776
CHASSIS FOR FARM IMPLEMENTS

Charles J. Vassberg, Rte 1, Box 201, Lyford, Tex.

Continuation-in-part of application Ser. No. 621,938, Mar. 9, 1967, now Patent No. 3,509,945, dated May 5, 1970. This application June 24, 1968, Ser. No. 739,247
Int. Cl. A01b *69/08*
U.S. Cl. 172—285 **5 Claims**

A farm implement having a first beam provided with a hitch including a universal joint and being slidable along a tow bar with the joint directly over the bar to insure sliding without binding during turning of the implement. A second beam is pivoted to the first beam for swinging between two operating conditions extending in opposite directions at an angle from the path of travel of the implement. The rear end of the second beam is supported by a steerable wheel assembly and the front end of the beam is provided with a depth gauge wheel which is automatically moved into either of a pair of corresponding operating positions responsive to

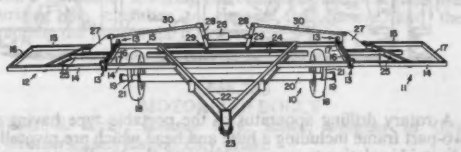


said swinging of said second beam to said respective conditions.

3,568,777
IMPLEMENT FRAME CONSTRUCTION

Richard Wayne Hook, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 30, 1968, Ser. No. 763,693
Int. Cl. A01b *63/10*
U.S. Cl. 172—316 **11 Claims**



An implement having a main frame and outrigger frames connected to the main frame by hinge members which normally prevent the outrigger frames from moving into the same plane as the main frame. A double-acting hydraulic cylinder is operably connected between the frames at a rearward portion thereof to raise and lower the outrigger frames and to force the outrigger frames into substantially the same plane as the main frame. When the hydraulic cylinder forces the outrigger frames into the plane of the main frame, it sets up a moment which counteracts the field load moment caused by earth-working tools suspended from the frames and reduces hinge stress.

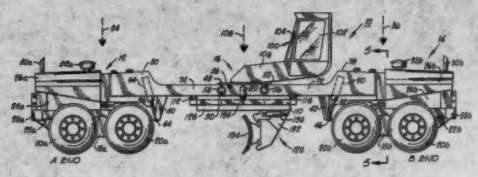
3,568,778
MOTOR GRADER APPARATUS

George W. Swisher, Jr., and Gordon L. Spivey, Oklahoma City, Okla., assignors to CMI Corp., Oklahoma City, Okla.

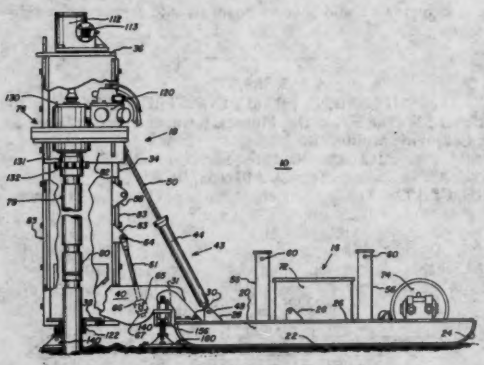
Filed Jan. 23, 1969, Ser. No. 793,274
Int. Cl. E02f *3/76;* **A01b** *51/02;* **B62d** *5/00*
U.S. Cl. 172—785 **11 Claims**

Apparatus for earth working which consists of two similar mobile assemblies including drive engine and traction elements and which are oriented in back-to-back manner to support a main frame therebetween in articulated suspension. The main frame is adapted to carry a subframe which further

supports one or more earth working implements in adjustable manner therebelow. and the operating cab is movably supported by a support arm which is rotatably affixed at a central position on the main frame.



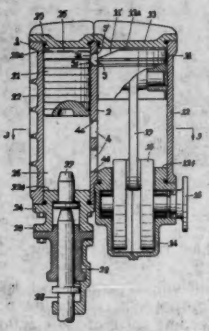
3,568,779
UNDERGROUND ROTARY DRILL
Robert E. Cannon, P.O. Box 629, Hibbing, Minn.
Filed Sept. 19, 1969, Ser. No. 859,288
Int. Cl. E21c *11/02*
U.S. Cl. 173—44 **12 Claims**



A rotary drilling apparatus of the portable type having a two-part frame including a base and head which are pivotally adjustable relative to one another with the headframe carrying the drill and feed structure. The headframe incorporates a feed drive in the form of a ball-screw arrangement which supports the cross head carrying the drill and motor for the same to reduce the overall size and length of the supporting structure for the drill and feed motors. This provides a compact drilling apparatus particularly adaptable for drilling sites having a minimum of head room.

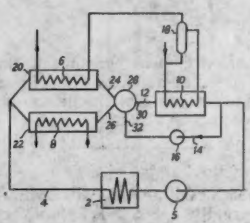
3,568,780
FREE-PISTON-TYPE PERCUSSION DEVICE WITH AIR PUMP
Susumu Matsuo, Shizuoka-ken, Japan, assignor to Daiichi Kikai Seisakusho Co., Ltd., Osaka, Japan
Filed July 22, 1969, Ser. No. 843,669
Claims priority, application Japan, Mar. 15, 1969, 44/19256
Int. Cl. B25d *11/02, 11/12*
U.S. Cl. 173—116 **1 Claim**

A tool cylinder is provided in parallel with an air pump cylinder. Each cylinder is separated by its respective piston into an upper and a lower chamber each of which communicates pneumatically through an upper and a lower opening with its counterpart in the other cylinder. The openings are open and closed by the relative position of the pistons. A constant volume of air is sealed tightly in the chambers. When the pump piston is actuated upwardly by an external rotary power source, highly compressed air is supplied on the head of the free-piston while a negative air pressure is produced in the lower chambers. The combination of this high pressure above and low pressure below causes the free-piston to be forced abruptly downward. At the lower dead point of the free-piston it hits a chisel and opens an upper portion of the lower opening thus allowing the high pressure in the upper chamber of the tool cylinder to escape to the lower chamber of the pump cylinder. A lower buffer or cushion chamber of relatively large volume is formed in the tool cylinder and it absorbs a part of the downward energy of the free-piston. The free-piston is pushed back by this cushion chamber to a position where a lower portion of the



lower opening is opened. At this time, the pump piston is moving downward and thus provides a positive pressure in the lower chamber and a negative pressure in the upper chamber. The free-piston is driven upward by these positive and negative pressures and its own inertia and closes the upper opening, thereby forming an upper buffer chamber in the tool cylinder. The upward movement of the free-piston is absorbed by the upper buffer chamber and the free-piston then falls by its weight to a position where the upper opening is opened, to complete the cycle.

3,568,781
METHOD OF OPERATING LIQUID METAL COOLED NUCLEAR REACTOR
John W. E. Campbell, Ramla, Altwood Drive, Maidenhead, Berkshire; Martin C. Peters, 18 Ewhurst Close, Nonsuch Vale, Cheam, Surrey, and Alfred J. Perrin, 2 Windermere Ave, S. Kenton, Harrow, Middlesex, England
Filed Sept. 28, 1967, Ser. No. 671,381
Claims priority, application Great Britain, Sept. 29, 1966, 43669/66
Int. Cl. G21c *15/28*
U.S. Cl. 176—65 **9 Claims**

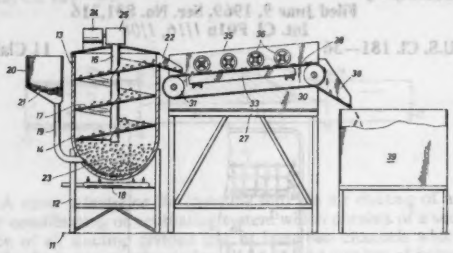


This invention relates to a nuclear reactor which utilizes liquid metal as a coolant medium in the primary coolant circuit to transfer heat from the core region of the reactor to a tubulous vapor generating unit. A recirculation branch is connected around a portion of the primary coolant circuit which contains the vapor generating tubes and means are provided to recirculate the primary coolant through the recirculation branch at a rate sufficient to ensure that the heat flux at the vapor generating tubes is less than the heat flux at which a departure from nucleate boiling occurs within the tubes.

3,568,782
METHOD FOR CONTROLLING DRILLING MUD LOSS IN A WELLBORE

Jack C. Cox, Houston, Tex., assignor to Tenneco Oil Company, Houston, Tex.

Filed Dec. 8, 1969, Ser. No. 883,193
Int. Cl. E21b 21/04
U.S. Cl. 175—72 5 Claims

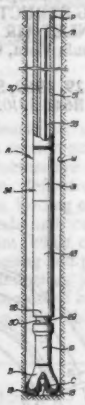


A method for controlling drilling mud loss from a wellbore penetrating a thief formation. It includes the steps of storing a supply of unpopped cereal grain, such as popcorn, at the well site. Upon the indication of loss of drilling mud to the thief formation, a supply of the cereal grain is popped by passing the same through a heating zone to thereby expand the same and thereafter pumping the expanded material down the wellbore with the drilling mud until the thief formation is plugged.

3,568,783
FLUID-ACTUATED IMPACT APPARATUS

David V. Chenoweth, and Talmadge L. Crowe, Houston, Tex., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed May 9, 1969, Ser. No. 823,437
Int. Cl. E21b 1/00; F21b 5/00
U.S. Cl. 175—92 27 Claims

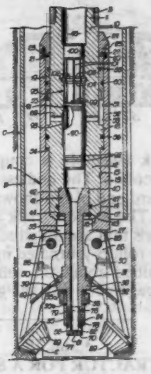


A fluid-actuated hammer drill for drilling well bores and connected to a drill pipe string through which drilling fluid is pumped, which passes through a pair of shock passages controlled at their lower portions by one or more valves, the valves being switched by the flowing fluid to alternately close each shock passage, creating a high-pressure pulse in each passage when closed which acts upon and reciprocates a hammer to rapidly impact upon a companion anvil connected to a drill bit, the fluid flowing through the bit to convey the cuttings to the top of the well bore.

3,568,784
EXPANSIBLE ROTARY DRILL BIT

Archer W. Kammerer, Jr., Fullerton, Calif., assignor to Baker Oil Tools, Inc., City of Commerce, Calif.

Filed Sept. 24, 1968, Ser. No. 762,110
Int. Cl. E21b 9/32
U.S. Cl. 175—268 18 Claims

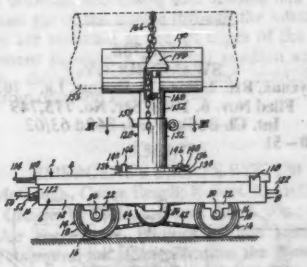


An expansible rotary drill bit and method of using the same, wherein the expansible cutters are hydraulically held open by a quantity of liquid in a chamber between the mandrel of the bit and the cutter supporting body, the fluid being trapped in the chamber by a sleeve which closes ports in the mandrel, the sleeve being shiftable to open the ports to allow retraction of the cutters. Tools are provided for moving the sleeve in and pulling the sleeve from the mandrel of such a bit. A method is employed that uses such a bit in an air drilling operation, including the steps of filling the chamber with a fluid after lowering the bit in a drilled hole, and pressurizing the chamber to expand the cutters, and then trapping the fluid in the chamber.

3,568,785
MOTORIZED DOLLY

Walter S. Gray, Kansas City, Kans., assignor to Gray Brothers, Inc., Kansas City, Kans.

Filed Feb. 20, 1969, Ser. No. 800,922
Int. Cl. B60l 9/00
U.S. Cl. 180—2 5 Claims

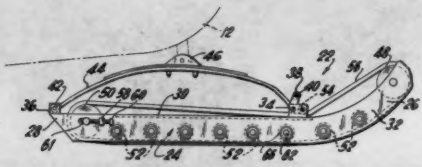


A motorized dolly consisting of a low platform supported by a pair of drum-type ground-engaging wheels, an electric motor disposed entirely beneath said platform so as to leave the top of said platform planar and unobstructed, and operable to drive said wheels, remote control means for operating said motor, and brake means for inhibiting the turning of said wheels.

3,568,786
SNOWMOBILE AND ATTACHMENT THEREFOR

Herbert R. Harsch, 233 Windsor Parkway, Oceanside, N.Y.

Filed Dec. 18, 1968, Ser. No. 784,762
Int. Cl. B62m 27/02
U.S. Cl. 180—5 4 Claims

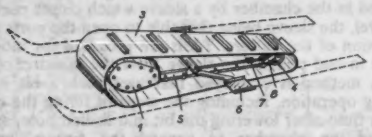


An endless track assembly is coupled to the steering assembly of a snowmobile. The endless track assembly is positioned at the forward end of the snowmobile and replaces the conventional skis. The endless track assembly includes elongated support means that are longitudinally positioned, a plurality of transverse rollers journaled in the support means and an endless belt trained about the rollers such that a portion of the belt is in engagement with the ground.

3,568,787
TRACTOR FOR A SKIER

Henri Gremeret, 1 Avenue de Verdun, Menton-Aples-Martimes, France

Filed Jan. 9, 1969, Ser. No. 789,987
Claims priority, application France, Jan. 9, 1968, 135553
Int. Cl. B62m 27/02
U.S. Cl. 180—5 14 Claims

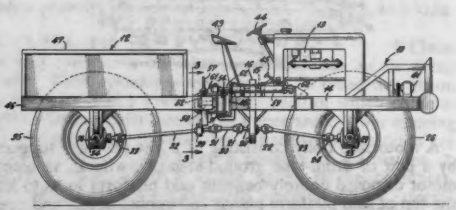


A tractor for a skier comprises a motor supporting a driving pulley around which passes an endless crawler belt which in turn passes on a guide pulley adjustably supported on a frame rail attached to the motor for tensioning the belt. The frame rail supports rollers which guide the lower run of the belt, said frame rail being dismantleable or foldable to enable transport of the tractor. Footrests on either side of the tractor are pivotably supported on a bar on the frame rail and stabilizer arms extend rearwardly of the footrests and are resiliently urged into contact with the ground for enabling the skier to shift his weight toward one or the other of the footrests and respective stabilizer arm to thereby steer the tractor.

3,568,788
SWAMP BUGGY

Harold Mayeaux, Rte. 2, Box 172, Houma, La. 70360

Filed Nov. 6, 1968, Ser. No. 773,749
Int. Cl. B60k 17/34; B62d 63/02
U.S. Cl. 180—51 4 Claims

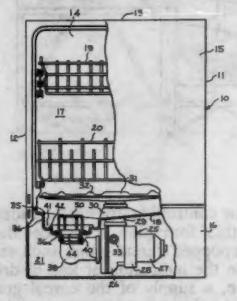


An articulated swamp buggy vehicle including coupling means which allows yaw and roll movement of the vehicle at the point of articulation. The coupling means can be locked for roll while continuing to permit yaw movements thus enabling steering of the articulated unit.

3,568,789
NOISE BAFFLING METHOD AND APPARATUS FOR A WASHING APPLIANCE

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company

Filed June 9, 1969, Ser. No. 831,316
Int. Cl. F01n 1/16, 1/08
U.S. Cl. 181—36 11 Claims

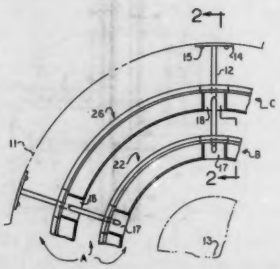


For a washing machine such as a dishwasher or the like having a substantially large volume drainage conduit means extending from the machine's washing chamber to a receiving pump situated downstream from the washing chamber, a method is provided for baffling pump noise normally emitted from the drainage conduit when drainage flow begins to ebb at the end of a chamber drainage operation. Apparatus is provided for implementing the method described, including valve means adapted to substantially close off the cross-sectional area of the drainage conduit when drainage flow diminishes.

3,568,790
AIR DIVIDER RING STRUCTURE FOR JET ENGINE INLET AIR DUCT

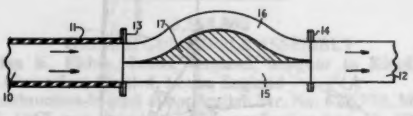
Edward M. Sankey, Chula Vista, Calif., assignor to Rohr Corporation

Filed Sept. 29, 1969, Ser. No. 861,849
Int. Cl. B64d 33/02; F01n 1/10
U.S. Cl. 181—36 8 Claims



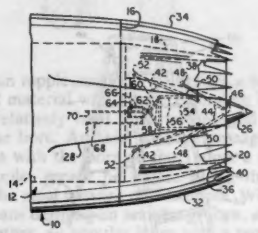
One or more inlet air dividing, sound absorptive rings are supported coaxially within the inlet duct of a jet engine nacelle on a plurality of radially inwardly extending, streamlined struts. Each sound absorptive ring comprises a plurality of arcuate honeycomb panel sections releasably connected at their lateral edges by piano hinge type connectors to narrow longerons supported by said struts, the panel sections and the longerons comprising complementary segments of each sound absorptive ring.

3,568,791
AIR DUCTING
Russell E. Luxton, Turramurra, New South Wales, Australia, assignor to The University of Sydney, Sydney, New South Wales, Australia
Filed Feb. 25, 1969, Ser. No. 802,184
Claims priority, application Australia, Feb. 27, 1968, 34220/68
Int. Cl. F01n *1/10, 1/06*
U.S. Cl. 181—44 11 Claims



A noise attenuator for inserting into the air ducting of an air-conditioning or ventilating system which consists of a section of air ducting divided into at least two channels which differ from one another in length by an odd number of halves or quarters of the wave length of the predominant sound wave which is to be suppressed or diminished.

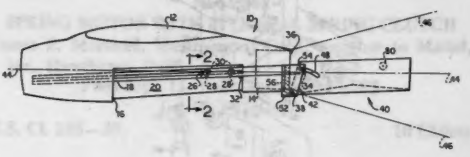
3,568,792
SOUND-SUPPRESSING AND THRUST-REVERSING APPARATUS
George R. Urquhart, Bonita, Calif., assignor to Rohr Corporation
Filed June 18, 1969, Ser. No. 834,343
Int. Cl. F01n *1/08, 1/14;* B64d *33/06*
U.S. Cl. 181—51 13 Claims



Apparatus includes exhaust gas nozzle and at least two deflectors of arcuate cross section generally surrounding nozzle. Trailing edges of deflectors are serrated to form spikes. In first, retracted position, deflectors are streamlined with nacelle. In second position, leading edges of deflectors scoop in ambient air around nozzle and some spikes overlie nozzle exit to turbulize gas stream, while others intercept ambient air, causing mixing and cooling and noise reduction. In third, fully extended position deflectors join to produce reverse thrust bucket, and spikes are offset laterally to mesh and permit tight closing. Nozzle may be daisy type to also produce noise suppression.

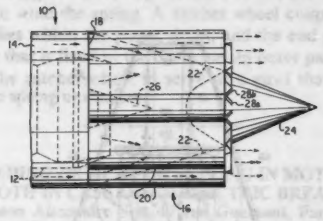
3,568,793
SOUND-SUPPRESSING APPARATUS
Victor Millman, and Remo Tontini, San Diego, Calif., assignors to Rohr Corporation
Filed Sept. 25, 1969, Ser. No. 860,974
Int. Cl. F01n *1/14, 1/16;* B64d *33/06*
U.S. Cl. 181—51 7 Claims

Support means carried by engine housing has pivotal mounting means at aft end. Support means is axially slidable between forward stowed position and aft deployed position. In latter, pivotal mounting means is adjacent to nozzle exit. Noise shield is swingably mounted on mounting means to swing vertically on lateral axis. Shield is elongate and preferably trough shaped to surround jet stream and reflect noise upward. Optimum results require holding shield at suitable angle to intercept expansion boundary of jet stream. Upper or inner surface of shield is formed with leading edge lip contiguous to jet stream at nozzle exit, followed by depressed forward portion, raised intermediate portion and tapered aft portion. Leading edge lip produces Coanda-type



attachment to jet stream, depressed portion produces reduced static pressure to urge shield into interception position, and tapered aft portion produces increasing pressure gradient to oppose effect of forward portion and trim shield to position for optimum thrust and noise attenuation. When support means is stowed, shield is carried forward to stow in streamlined relation to engine housing.

3,568,794
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF A FAN-JET ENGINE
Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation
Filed Oct. 2, 1969, Ser. No. 863,083
Int. Cl. F01n *1/08, 1/14;* B64d *33/06*
U.S. Cl. 181—51 2 Claims

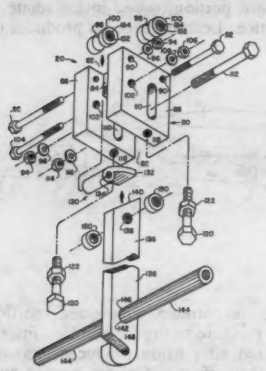


A tubular housing is concentrically spaced around the aft section of a fan-jet engine casing, and a lobed thrust nozzle is mounted on the aft end of said housing and extends rearwardly from said casing, fan air flowing to the nozzle through the space between said casing and housing and then flowing with exhaust gas of the engine through the lobes of said nozzle. Vanes are mounted at the aft edges of the nozzle lobes for movement between a retracted position extending longitudinally thereof and a deployed position extending laterally from opposite sides thereof.

3,568,795
EMERGENCY ESCAPE SYSTEM
John T. McGough, Cocoa Beach; Robert A. McDaris, Merritt Island; Charles R. Billings, Cocoa Beach, Fla.; Paul F. Neal, Clark Air Force Base, Philippines, and James C. Sweat, Merritt Island, Fla., administration the United States of America as represented by the Administration of the National Aeronautics and Space Administration
Filed Oct. 2, 1967, Ser. No. 672,384
Int. Cl. B61b *7/20*
U.S. Cl. 182—10 3 Claims

An automatic braking device for preattachment to a cable connected between high and low elevational points to provide an emergency escape system. The braking device and cable are so arranged that as a person using the emergency

escape system descends from the high elevational point, the slope of the cable causes the angle of the braking device to

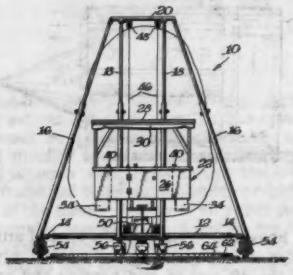


change in relation to the cable thereby effectuating gradual stopping of the person as he approaches the lower elevational point.

3,568,796
FRUIT WORKERS PLATFORM

Lawrence Edward Stanhope, 223 Windsor Drive, Lakeland, Fla. 33803

Filed Apr. 30, 1969, Ser. No. 820,390
Int. Cl. E04g *1/18*
U.S. Cl. 182—141 8 Claims



A fruit workers platform includes a support frame which can be moved from tree to tree and at least one working station thereon. Means are provided to dispose the workers at all levels of each tree for picking, pruning, etc.

3,568,797
SPORTSMAN'S BASE

Willie R. Hardy, P.O. Box 306, Tyhran Drive, Kathleen, Ga.

Filed Apr. 10, 1969, Ser. No. 815,112
Int. Cl. E04g *3/10*
U.S. Cl. 182—142 5 Claims

A sportsman's base which includes a collapsible seat housed within a supportable frame. The supportable frame is attached to an adjustable and hand-cranked pulley system whereby once attached to a vertical structure the same may be raised or lowered at will. The attachment of the combination pulley system and support frame to the vertical structure includes a pivotally mounted and perpendicularly extending bar member which is connected to the channel of a plate member. The plate member includes teeth for digging into and fixedly attaching to the vertical structure. Additionally, a belt is connected to another bar member attached to the plate member and to the perpendicularly extending bar for providing added leverage to the gripping teeth. Initially, the

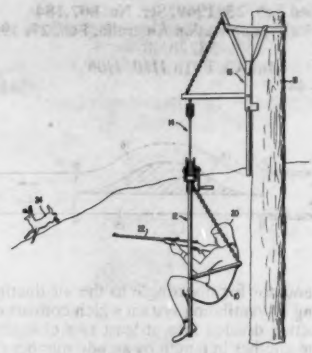


plate member is hoisted to the desired level by the use of interfitted poles which fit within a similar pole connected to the channel of the plate member.

3,568,798
LADDER STABILIZER

Ted W. Pierce, P.O. Box 231, Stratton, Nebr.

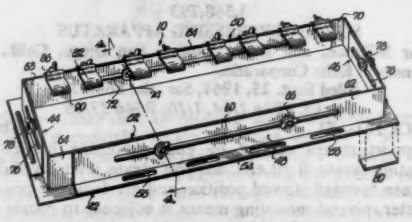
Filed July 28, 1969, Ser. No. 845,293
Int. Cl. E06c *1/22*
U.S. Cl. 182—172 6 Claims

A ladder stabilizing apparatus which consists of foldable, extensible legs mountable on the siderails of a ladder by means of a hinging structure which dictates and limits the angular displacement of the legs.

3,568,799
OIL FLOW SUPPRESSION ATTACHMENT FOR INTERNAL COMBUSTION ENGINES

Stanley A. Bivins, 3429 Paseo, Kansas City, Mo. 64109

Filed Apr. 17, 1969, Ser. No. 817,052
Int. Cl. F01m *11/00*
U.S. Cl. 184—6 8 Claims



An oil flow suppression attachment for internal combustion engines to be secured to the engine in place of the

valve cover when the valve cover is removed for the purpose of adjusting the valve, the attachment being in the form of a frame having a base flange secured to the head of the engine and an upstanding wall which circumscribes a portion of the upper surface of the head whereby to retain therewithin oil which flows into said area during the adjustment of the valves when the engine is running. The frame carries a plurality of fingers which can be selectively disposed in overlying relation ship to oil orifices whereby to suppress the stream of oil normally entering the area through the orifices.

3,568,800

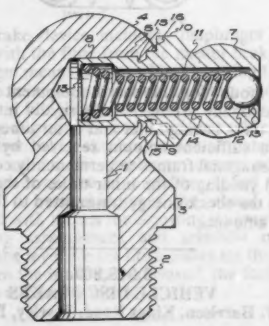
GREASE GUN NIPPLE ASSEMBLY

Adrian K. Fisher, Leeds, England, assignor to Kingfisher (Lubrication) Limited, Leeds, England

Continuation-in-part of application Ser. No. 622,770, Mar. 13, 1967, now abandoned. This application Aug. 18, 1969, Ser. No. 850,993

Int. Cl. F16n *21/02*; F16b *39/00*

U.S. Cl. 184—105 **3 Claims**



A grease gun nipple assembly comprises a body adapter of relatively soft material with a bore extending through it, and a nipple of relatively hard material engaged frictionally at one end of the bore. An axial through passage in the nipple communicates with the bore so that, when a grease gun engages the nipple, grease be passed along the bore of the adapter and the axial passage of the nipple. When the nipple, which has means defining an annular groove, and the adapter are fitted together, an annular ledge with a tapered surface is deformed out of the material of the body adapter and this annular ledge engages the nipple groove which is higher at the rear of the nipple than at the front, to aid in force fitting the nipple into the bore of the body adapter by filling the nipple groove, the depth of the groove increasing in the direction in which the nipple is pushed into the bore.

3,568,801

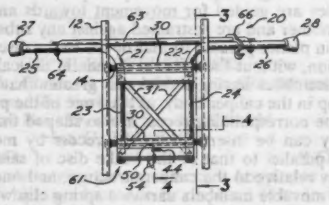
LADDER STABILIZING DEVICE

Richard L. Werner, Sharon, Pa., assignor to H.D. Werner Co. Inc., Greenville, Pa.

Filed Feb. 28, 1969, Ser. No. 803,282

Int. Cl. E06c *7/48*

U.S. Cl. 182—214 **10 Claims**



A stabilizing device is provided with a pair of inverted, rung engaging channel members and two outwardly diverging arms, the arms being connected together by a lateral brace. The channel members are adapted to fit over rungs of different shapes and sizes, and retainer means extend across the open side of one channel member to maintain the member in engagement with a rung.

3,568,802

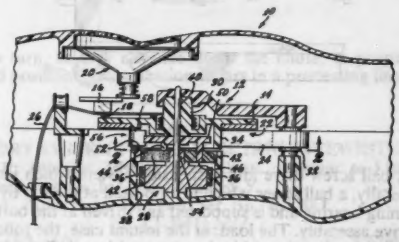
SPRING MOTOR WITH INTEGRAL SPRING CLUTCH

James E. Marshall, Westminster, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 11, 1969, Ser. No. 857,083

Int. Cl. F03g *1/00*

U.S. Cl. 185—39 **10 Claims**



A spring motor for toys and other mechanisms whose speed is regulated by a governor and that includes a constant-torque spring which can be wound onto a power drum or unwound therefrom onto a takeup spool, wherein a ratchet is employed to uncouple the governor from the spring during winding of the spring thereon, to reduce the power required to wind the spring. A ratchet wheel coupled to the governor lies within the power drum, and the end portion of the spring that is fixed to the drum has an outer part that extends to the ratchet wheel to serve as a pawl that drives it only as the spring unwinds.

3,568,803

EXTENDING DEVICE FOR SETTING IN MOTION A LIFT-BOOTH IN CASE OF AN ELECTRIC BREAKDOWN

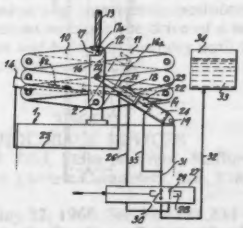
Jacques Leon Alexandre See, 47 rue Guersant, Paris 17eme, and Alain Albert Louis Houille, 5 allee La Bruvere, Clichy-sous-bois, Seine Saint-Denis, France

Filed Dec. 2, 1968, Ser. No. 780,608

Claims priority, application France, Dec. 1, 1967, 130593

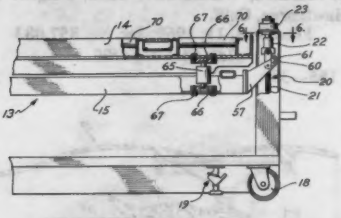
Int. Cl. B66b *9/00*

U.S. Cl. 187—1 **10 Claims**



The device for setting in motion a lift-booth in case of an electrical breakdown comprises extending connecting means interposed between the booth and the suspension cable thereof, the weight of said booth being used as a source of energy for working said means so as to cause their extension in an adjustable measure.

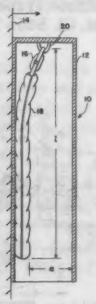
3,568,804
ELEVATING TABLE WITH IMPROVED BALL SCREW DRIVE
Robert A. Olsen, 309 S. Oak St., Palatine, Ill.
Filed Aug. 14, 1968, Ser. No. 752,627
Int. Cl. B66b 11/04
U.S. Cl. 187—25 3 Claims



A ball screw drive and suspension system which includes, generally, a ball screw which is supported at the top by a self-aligning bearing and is supported and driven at the bottom by a drive assembly. The load, in the instant case, the roller platform of an elevating table, is supported by a ball nut through a pair of links capable of accepting misalignment between the ball screw and the load supporting mechanism, i.e., the roller platform. With this arrangement, the alignment tolerances between each vertical lift assembly are far more liberal than heretofore possible.

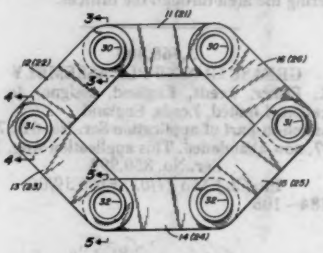
The elevating table further includes four load cells which are functionally associated with its roller platform and an indicator mechanism, in a fashion such that articles placed on the roller platform are automatically weighed and the weight indicated.

3,568,805
SUSPENDED MASS IMPACT DAMPER
Wilmer H. Reed III, Hampton, Va., Administration the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Jan. 29, 1969, Ser. No. 794,968
Int. Cl. F16f 7/10
U.S. Cl. 188—1 11 Claims



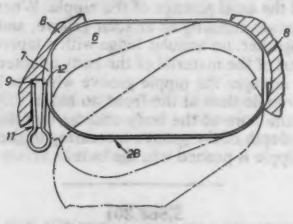
This disclosure concerns a damper mechanism for tall and towerlike structures, such as smokestacks and antennas, etc., and comprises a suspended mass such as a chain confined in an enclosure fastened to the primary structure. Vibrations of the primary structure produce opposing movements of the mass and resulting impacts of the mass with the enclosure sides in turn produce a damping force on the primary structure.

3,568,806
TORSION YIELD SHOCK MOUNT
Lowell T. Butt, Chesapeake, Va., assignor to the United States of America as represented by the Secretary of the Navy
Filed Aug. 27, 1969, Ser. No. 853,447
Int. Cl. F16f 7/12
U.S. Cl. 188—1 9 Claims



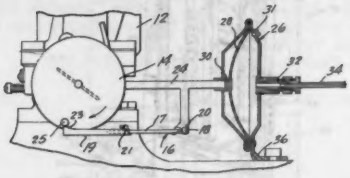
A shock mount for shipboard equipment comprising two sets of hexagonally arranged links rigidly interconnected by tubular pin units having inner and outer tubes. Sudden shock energy of a sufficient amount received by the vessel will cause the hexagonal frames to permanently collapse by virtue of torsional yielding of the inner tubes of the pin units. This will reduce the shock energy transmitted to the equipment to a tolerable amount.

3,568,807
VEHICLE DISC BRAKES
Anthony W. Harrison, Kings Road, Tyseley, Birmingham, England
Filed Mar. 10, 1969, Ser. No. 805,477
Claims priority, application Great Britain, Mar. 19, 1968, 13337/68
Int. Cl. F16d 65/02
U.S. Cl. 188—73.6 4 Claims



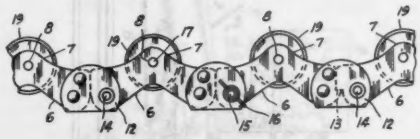
A caliper-type disc brake having renewable brake pad assemblies which are accommodated in opposed recesses formed in the caliper body on opposite sides of the gap in the body which receives the brake disc, the recesses and pad assemblies being complementarily shaped, so that the pad assemblies are guided for movement towards and away from one another and are restrained against any substantial movement in planes parallel to that of the brake disc; to allow the insertion, without the need to dismantle the caliper body, of pad assemblies having a thickness greater than the width of the gap in the caliper body, at least one of the pad assemblies and the corresponding recess are so shaped that the pad assembly can be inserted into the recess by movement in a plane parallel to that of the brake disc of said one pad assembly relative to the caliper structure, and one of said relatively movable members carries a spring clip while the other is provided with a cooperating shoulder with which the spring clip makes positive locking engagement when the pad assembly is in operative position, the spring clip yielding resiliently to permit such insertion.

3,568,808
MOTOR AND BRAKE CONTROL ANTISKID DEVICE
Ravanell Hampton, 1055 Cleveland, Kansas City, Kans.
Filed Mar. 14, 1969, Ser. No. 807,272
Int. Cl. F16d 67/00
U.S. Cl. 192—3 4 Claims



An antiskid brake device including diaphragm means in communication with the fluid from the master brake cylinder and said diaphragm means having a biasing spring therein for normally urging a lever means in one direction, and a carburetor device with a fast idling cam wheel member, and said lever means being disposed to move said cam wheel member to a pulling position when the brakes are actuated and the brake fluid bears against the diaphragm means, so that the speed of the engine will be at a pulling speed when the brakes are applied to avoid skidding of the vehicle. The lever means is provided with means for adjusting its length including a telescoping arrangement and setscrew means. A rounded foot on the lever means fits a pulley on the carburetor wheel, so when the brakes are released, the foot will pull the wheel back to a closed position.

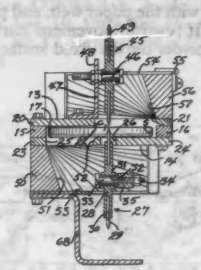
3,568,809
CONVEYOR
John Alexander Macdonald, 138 Kangaroo Point Road, Sylvania, New South Wales, Australia
Filed Aug. 5, 1968, Ser. No. 750,098
Int. Cl. B65g 13/11
U.S. Cl. 193—35 6 Claims



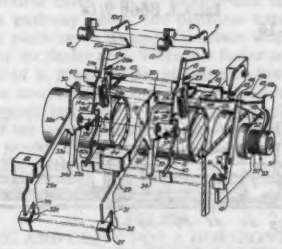
A conveyor having a plurality of rolls between sections of the conveyor which sections are arranged so that the conveyor will support a load applied in first direction but may be rolled up into a roll for easy transport by a force applied in a direction opposite to said first direction.

3,568,810
CAP TURNOVER DEVICE
Ben O. Daniels, Elmhurst, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 29, 1968, Ser. No. 779,816
Int. Cl. B65g 11/20
U.S. Cl. 193—43 8 Claims

A chute for delivering jar caps from a hopper or other supply source which is adapted to be disposed in an inclined position so that caps emerging from the hopper will pass by gravity between a pair of top and bottom pin wheels which control the turning movement of the caps, allowing those which are properly oriented, that is, those having the top panel uppermost, to pass without turning and continue down the chute but causing those which have the open side uppermost to turn, as they advance down the chute, to properly oriented position for application to jars in a processing line.



3,568,811
MEMORY SYSTEM FOR AN ELECTRIC TYPEWRITER
Arthur R. Johnson, Wethersfield, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Sept. 20, 1968, Ser. No. 761,041
Int. Cl. B41j 5/22
U.S. Cl. 197—107 5 Claims

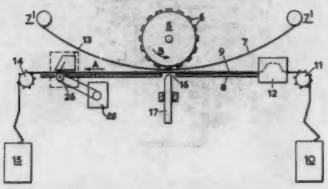


A typewriter provided with a bail operatively positioned upon initiation of a first type action to block the drive of a subsequently initiated type action or shift action and hold it in memory until the first type action has been substantially completed. The bail is also operatively positioned upon initiation of a shift action to block the drive of a subsequently initiated type action and hold it in memory until the shift action has been substantially completed.

3,568,812
HOLDBACK DEVICES
Ronald John Frank Eitel, Stoke-on-Trent, Staffordshire, England (c/o English Electric Computers, Ltd, Kidsgrove, England)
Filed May 22, 1968, Ser. No. 731,231
Claims priority, application Great Britain, May 24, 1967, 24059/67
Int. Cl. B41j 15/00
U.S. Cl. 197—133 2 Claims

The specification describes a holdback device for controlling the flow of a web of paper in a high-speed line printer. The device prevents reverse movement of the web, for example when being printed upon, and allows forward movement of it. The backward movement — caused by the web being gripped between the rotating character shaft and

the printing hammers — results in the misalignment of printed characters, and may even cause damage to the web. The devices described have a blade or pawl movably mounted in contact with the paper web, and pivotally bearing on a fixed surface. If reverse movement starts to take place the blade or pawl pivots on the fixed surface and grips the



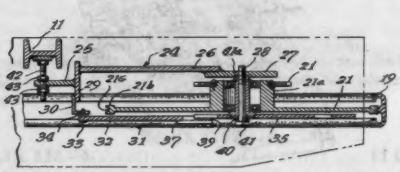
web between it and a drum contacting the other side of the web. The drum is free to move only in a sense such as to move the web in the forward direction and it is driven in this sense simultaneously with or immediately prior to movement of the web in the forward direction — when the printing of a line of characters has been completed — thus aiding the unlocking of the blade or pawl.

3,568,813

ESCALATOR STRUCTURE

Robert O. Schaeffer, and Leonard R. LaSalle, Jr., Moline, Ill., assignors to Montgomery Elevator Company

Filed Aug. 15, 1969, Ser. No. 851,161
Int. Cl. B66b *9/14*
U.S. Cl. 198—16 **7 Claims**



An escalator structure provided with an improved handrail-supporting and -guiding means in which the mounting for each handrail sheave includes sideplate means which is split from top to bottom into a first portion that is mounted on a sheave bracket and a second portion that is secured in end abutting relationship to the first portion by means of splice plates. A spindle for the sheave is removably mounted in the second portion; and as a result of the split sideplate structure removal and replacement of the sheaves is simplified. Furthermore, mounting of the upper guide for the handrail is improved.

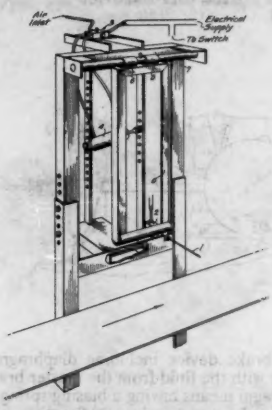
3,568,814

AUTOMATIC CONVEYOR DISCHARGE SYSTEM

Johnnie L. Gates, Prairieville, La., and Charles W. Chesmore, Sikeston, Mo., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jan. 7, 1969, Ser. No. 789,450
Int. Cl. B65g *47/42, 47/52*
U.S. Cl. 198—21 **1 Claim**

Distribution of filled bags of solids after bag sealing is obtained without interruption of flow by discharging bags from a constantly moving conveyor by means of an air-cylinder-powered discharging member which swings transversely across the conveyor in response to actuation of a flexible microswitch actuating arm by the moving bag, thereby transferring the bag to a second constantly moving conveyor. An



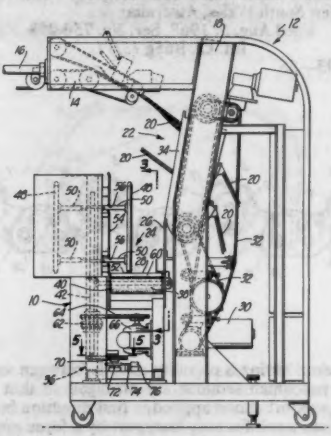
electrical counting and control system may be used so as to discharge the desired number of bags at any one of several such discharging stations.

3,568,815

OUTFEED CONVEYOR MECHANISM OF A CONVEYOR SYSTEM FOR CONVEYING UNITS SUCH AS STACKS OF PUBLICATIONS AND THE LIKE

Raymond L. Wiseman, Santa Ana, Calif., assignor to Sta-Hi Corporation, Newport Beach, Calif.

Filed July 26, 1968, Ser. No. 747,869
Int. Cl. B65g *15/14, 47/04;* **B65b** *33/14*
U.S. Cl. 198—23 **21 Claims**

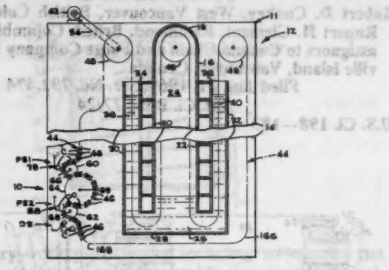


A preceding stacker deposits a stack of publications vertically downwardly between transversely spaced guide surfaces onto a longitudinal unit receiving surface of an outfeed conveyor at a unit receiving station. Both the unit receiving surface and at least a pair of pushers are intermittently simultaneously movable in either longitudinal direction to move the deposited stack in either longitudinal direction from the unit receiving station onto and across sets of freely rotatable, low inertia rollers. The pushers are normally positioned one at either longitudinal end of the unit receiving station during said stack deposit to straddle said stack and are synchronized for movement with the unit receiving surface, one across the unit receiving station while the other moves away from the station end, dependent on the direction of stack movement.

3,568,816
MULTIPLE FEED AND DISCHARGE SYSTEM AND METHOD

Warren S. Smith, and Adli A. Mughannam, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 19, 1968, Ser. No. 785,174
Int. Cl. B65g *17/46, 47/82*
U.S. Cl. 198—24 8 Claims

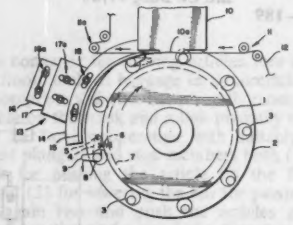


Mechanism for feeding at least two distinguishable groups of filled containers into the carriers of a processing conveyor by transferring rows of one of the group of containers into spaced ones of the carriers at one feed station and feeding containers of a distinguishable group of containers into other ones of the carriers at a second feed station that is remote from the first feed station. After processing the containers, all of the rows of containers are discharged from the carriers at a single discharge station and are thereafter segregated into their original groups. The processing conveyor has I-beam carriers thereon and is trained around pairs of small diameter sprockets at each feed station and at the discharge station so as to open the I-beam carriers sufficiently to accommodate a large size range of containers.

3,568,817
MACHINES FOR ORIENTED MARKING OF CYLINDRICAL OR TAPERED ROUND PARTS

Robert J. Douglas, Windsor, and Robert C. Aregood, South Windsor, Conn., assignors to The Bristol Brass Corporation, Bristol, Conn.

Filed Nov. 21, 1968, Ser. No. 777,826
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 6 Claims

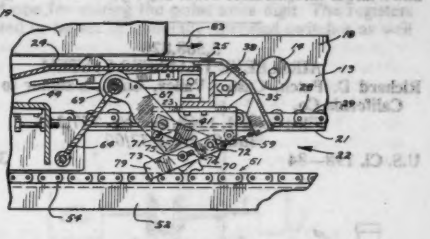


In a machine of the type wherein a part of circular cross section is rolled relatively across a die, the rotatably mounted part is oriented during its approach to the die by contacting its periphery with a relatively moving surface (e.g., a faster moving pressure dial or plate, or a stationary orienting guide) so as to initiate rotation of the part, and the rotation is stopped at a predetermined angular orientation when a projecting tab or the like rotating with the part contacts an orienting or escapement guide, the part then sliding relative to the surface until the orientating or escapement guide releases the projecting tab to permit the part to roll across the die. For multiple station marking, the part can be reoriented before each station, or the initial orientation can be maintained through all stations. The orienting arrangement can also be used to orient the part for a further different operation, or for automatic unloading.

3,568,818
CONVEYOR FOR ACCUMULATING, SPACING AND STORING ARTICLES

Douglas R. Hanson, 1720 9th Ave., Anoka, Minn. 55303

Filed Aug. 19, 1969, Ser. No. 851,250
Int. Cl. B65g *25/04, 47/26*
U.S. Cl. 198—34 3 Claims

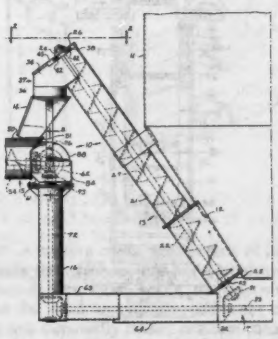


An accumulation conveyor track, including parallel lines of pairs of spaced-apart rollers, receives pallets or boxes to be stored thereon and positions and maintains them in predetermined spaced relation to each other. The boxes never get closer than the predetermined distance to each other. An elevatable and lowerable platform rides on a platform carriage. This carriage is chain driven in the direction of box movement and rides on a carriage track below and parallel to a conveyor track support plane defined by the top of the spaced-apart conveyor rollers. Such a platform raises into driving relationship to each box as it comes on to the conveyor and moves the box up to the predetermined distance from the box ahead of it. A feeler arm on the platform carriage ahead of the platform allows a sprocket on a pivoted platform drive arm to engage and run on a fixed roller chain pathway below the platform carriage track to position the platform in its upper position when no obstruction is felt by the feeler arm. When the feeler arm encounters a box ahead of it, it causes the platform to lower to position its box on a conveyor track at the predetermined distance from the forward box. The power to raise the platform and at least part of the weight of the box is derived from the reaction of the motion of the platform carriage with respect to the fixed chain pathway.

3,568,819
MOUNTING AND DRIVE FOR A HORIZONTALLY AND VERTICALLY SWINGABLE UNLOADING FEED CONVEYOR

William W. Mann, Talmage, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Feb. 24, 1969, Ser. No. 801,632
Int. Cl. B65g *47/58;* B60p *1/40*
U.S. Cl. 198—45 1 Claim



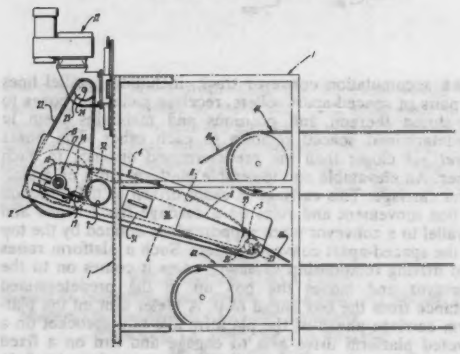
A feed-unloading mechanism from a mixing and storage tank comprises a vertically inclined lift auger conveyor

receiving feed from a mixing and storage tank and having a discharge head directing the upwardly conveyed feed downwardly through a pivotally mounted chute. The chute directs the feed into a generally horizontal unloading auger conveyor pivotally mounted to swing horizontally and vertically through wide arcs while the unloading feed auger is driven by a bevel gear drive comprising two small bevel gears and a larger intermediate bevel drive gear.

3,568,820
AIRSLEEVE TRANSFER SYSTEM

Richard D. Patch, Castro Valley, Calif., assignor to Lucas-California Co.

Filed Sept. 4, 1968, Ser. No. 757,241
Int. Cl. B65g *37/00*
U.S. Cl. 198—84 **3 Claims**

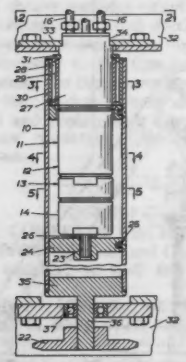


A device consisting of an endless belt buoyed upwardly by air under pressure discharging from a plenum chamber having a plurality of discharge openings; the raised belt absorbes impact loads imparted by materials received from above the device and discharges them to a lower elevation.

3,568,821
POWER-DRIVEN CONVEYOR ROLLER

Ernst Gunnar Gronkvist, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 19, 1968, Ser. No. 785,163
Claims priority, application Sweden, Dec. 29, 1967, 18,082/67
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **1 Claim**

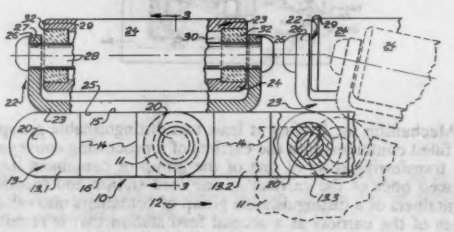


A conveyor roller of the type used in conveyor roller trains is provided. The conveyor roller includes a drum with an enclosed power unit. One end of the drum is journaled in a frame, the other end is journaled on the power unit which projects out from the drum and is fixedly mounted in the frame. A driving shaft of the power unit rotates the drum via a member inside the drum.

3,568,822
CONVEYOR CHAIN

Robert D. Conkey, West Vancouver, British Columbia, and Rupert H. Clement, Richmond, British Columbia, Canada, assignors to Canada Chain and Forge Company Ltd., Granville Island, Vancouver, Canada

Filed Jan. 21, 1969, Ser. No. 792,474
Int. Cl. B65g *17/24*
U.S. Cl. 198—183 **3 Claims**

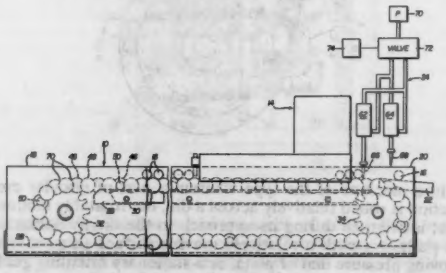


A conveyor chain formed of pintle-connected links wherein alternate links of the chain carry elongated roller assemblies having rollers extending longitudinally of the direction of travel of the chain and forming a supporting surface for objects to be transported and wherein each assembly is positioned on its carrying link so as to extend over and thereby be supported by a link immediately in advance of its carrying link when the chain extends in a straight line condition.

3,568,823
STORAGE CONVEYOR

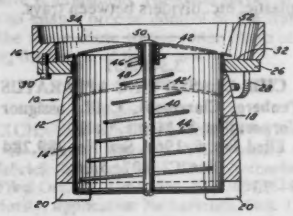
Bruno Rettig, Ypsilanti, and William G. Lehman, Birmingham, Mich., assignors to Hydromation Engineering Company, Livonia, Mich.

Filed May 12, 1969, Ser. No. 823,838
Int. Cl. B65g *17/00*
U.S. Cl. 198—189 **8 Claims**



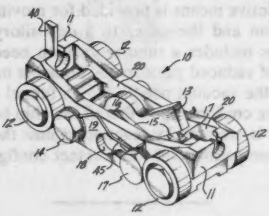
Article handling apparatus utilizing an endless chain to move elongated article supporting rollers that are staggered to form article spaces and are also offset relative to each other to support the elongated articles at spaced points along their linear surface. The apparatus incorporates a gate mechanism that can be selectively actuated to stop the article while the chain continues to move and also to pass single articles when wanted.

3,568,824
VIBRATOR WORK PARTS FEEDER AND RESERVOIR SUPPLY SYSTEM
George M. Tarzian, 1744 Rosehill Drive, Chicago, Ill.
Filed July 9, 1968, Ser. No. 743,551
Int. Cl. B65g 27/02
U.S. Cl. 198—220 7 Claims



A vibratory work parts feeder including an annular rim mounted for vibrational actuation and having a spiral ascending track on its inner periphery, a deep reservoir bowl for work parts disposed in concentric relation therewithin and extending relatively below said rim, and means within the reservoir bowl for elevating and maintaining work parts at the level of said rim for distribution thereto and subsequent transfer thereby.

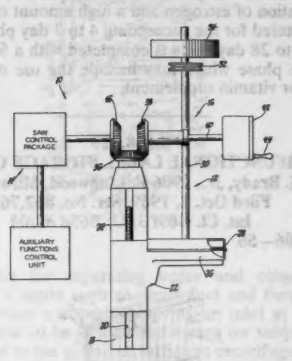
3,568,825
CARGO MOVING SHUTTLE CONVEYOR
Donald F. Munger, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed June 27, 1968, Ser. No. 740,621
Int. Cl. B65g 25/08
U.S. Cl. 198—221 9 Claims



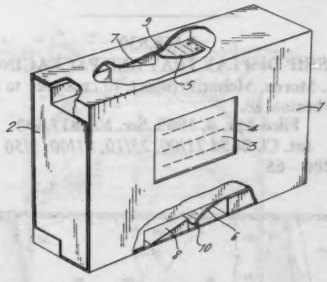
A shuttle conveyor for moving articles fore-and-aft on a track on a floor, such as baggage in an aircraft cargo compartment, comprises a shuttle bar pivotally mounted in a carriage movable on the track and a link pivotally connected to the shuttle bar and cooperative with suitably positioned spring loaded plungers and stop members both (1) for erecting the bar for pushing the article on the floor in one direction, and (2) for lowering the bar for passing under the articles to again rise and push the articles in the other direction at the option and control of a distant operator.

3,568,826
AUTOMATIC SAW CONTROL ASSEMBLY FOR A LINECASTING MACHINE
Eugene A. Mychalowych, and Gerald A. Fasse, Warren, Mich., assignors to Booth Newspapers, Inc., Detroit, Mich.
Filed Mar. 29, 1968, Ser. No. 717,328
Int. Cl. B41b 11/72
U.S. Cl. 199—59 6 Claims

The subject matter of this invention is a saw control assembly of the type for use with a linecasting machine having a saw movable between various cutting positions by a hand operated means. The assembly includes a motorized drive for moving the saw while retaining the hand operated means, the drive includes a clutch for transmitting driving forces to the saw for slipping in response to a predetermined resistance to prevent injury to the motorized drive. An electronic closed servo loop is utilized for activating and deactivating the motorized means to control the cutting position of the saw. The servo loop includes a decoder utilizing NAND logic for developing a saw signal and 8-4-2-1 BCD signals from alphanumeric input signals, the signals from the decoder set a set of four registers, one for storing the pica tens digit, one for storing the pica units digit, one for storing the point tens digit, and one for storing the point units digit. The registers are adapted to be set by manually operated switches as well as by signals received from the decoder. The desired command position stored in the registers is compared with signals developed by an angular shaft encoder whose signals in 8-4-2-1 BCD form indicate the actual position of the saw by a parallel comparator. The parallel comparator employs NAND logic and develops various signals including drive-up and drive-down signals. The latter two signals control the direction of the motor by controlling first and second power transistor means, each of which in turn controls a pair of switching transistors.



3,568,827
TRANSPORT OR MAILING CONTAINER
Hans-Richard Haring, Schwabenstr. 13, Solingen, Germany
Filed June 2, 1969, Ser. No. 829,237
Int. Cl. B65d 5/38, 27/06, 43/20; E05c 19/06
U.S. Cl. 206—1.5 8 Claims

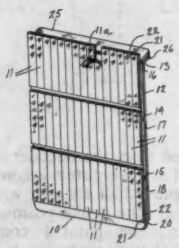


A transport or mailing container consists of two interfitting sections wherein the outer section has a window aperture and the inner section has label space on opposite walls corresponding to the window aperture, the inner container carrying at least one outwardly biased resilient means for engaging behind a corresponding stop provided on the inside of the outer section which has also an opening opposite the resilient means for exerting inward pressure on the resilient means to clear the stop.

3,568,828
MODIFIED SEQUENTIAL ORAL CONTRACEPTIVE
Leonard Joseph Lerner, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
No Drawing. Filed Mar. 1, 1967, Ser. No. 619,562
Int. Cl. A61j 7/00
U.S. Cl. 206—42 5 Claims

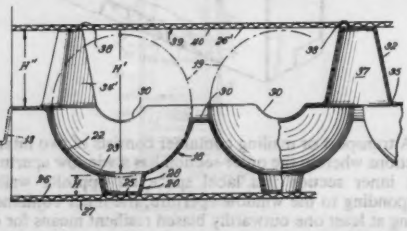
This invention relates to new modified sequential oral contraceptive preparations and a method of administering them. According to this invention a regimen is followed in which a combination of estrogen and a low amount of progestogen is administered for the first 14 to 19 day phase of the cycle and a combination of estrogen and a high amount of progestogen is administered for the succeeding 4 to 7 day phase of the cycle. A 25 to 28 day cycle is completed with a 5 to 7 day hormone-free phase which may include the use of placebos or iron and/or vitamin supplement.

3,568,829
BIFUNCTIONAL LABEL STORAGE CARD
William H. Brady, Jr., 2906 E. Linnwood, Milwaukee, Wis.
Filed Oct. 1, 1969, Ser. No. 862,760
Int. Cl. G09f 3/02; B65d 83/08
U.S. Cl. 206—56 6 Claims



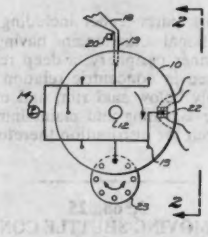
A bifunctional label storage card including a carrier member with pressure-sensitive adhesive labels stored on one of its surfaces and a hinge member detachably joined to the opposite surface of the carrier member, the carrier member being separable into two portions along at least one zone underneath portions of the labels stored thereon and the hinge member also being separable into at least two portions, so that a portion separated from the carrier can be hinged backwardly to expose an end of labels stored thereon or, alternatively, a portion of the carrier member and a portion of the hinged member can be separated from the balance of the structure for withdrawal of labels from the card and then precisely replaced to provide continued protection against soiling or other damage to the adhesive of any unused labels.

3,568,830
SHIP-DISPLAY TRAY AND PACKAGING
Robert A. Moren, Mount Prospect, Ill., assignor to Plastofilm, Inc., Wheaton, Ill.
Filed Apr. 4, 1969, Ser. No. 813,603
Int. Cl. B65d 71/00, 25/10, 81/00, 5/50
U.S. Cl. 206—65 9 Claims



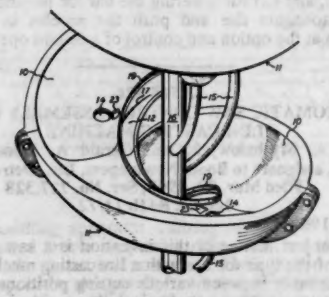
A tray for packaging and displaying delicate articles such as pieces of fruit. The trays, which are nestable when empty, include a number of wells which snugly receive individual articles. Hollow supporting legs extend both downwardly below the tray and upwardly above the tray, the downwardly extending legs opening on the upper side of the tray and the upwardly extending legs opening on the bottom of the tray. The height from the bottom of the well to the top of the extending legs is greater than the corresponding dimension of the article contained in the well. Filled trays are stackable using cardboard, plastic, etc. dividers between trays.

3,568,831
CHIP-CLASSIFYING APPARATUS
Mortimer Penberg, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Jan. 6, 1969, Ser. No. 789,284
Int. Cl. B07c 5/00
U.S. Cl. 209—73 12 Claims



According to the present disclosure, chip-classifying apparatus is provided with a platen having conductive film contacts in a configuration conforming to the contact configuration of the chip device to be classified. The platen is mounted at a test station and is electrically connected to suitable test apparatus. Motive means is provided for moving the chips to the test station and thereafter to a depository station. The motive means includes a tubular vacuum needle connected to a source of reduced pressure. A funnel is mounted to the open end of the vacuum needle, which funnel has a configuration and size conforming to that of the chip being moved so that the chip is oriented by reaction against the funnel to an orientation compatible with the contact configuration of the platen.

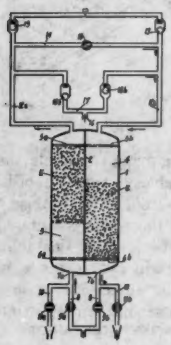
3,568,832
HELICAL ORE CONCENTRATOR
Bo K. G. Persson, Trelleborg, Sweden, assignor to Trelleborgs Gummifabriks Aktiebolag, Trelleborg, Sweden
Filed Feb. 3, 1969, Ser. No. 796,046
Claims priority, application Sweden, Feb. 9, 1968, 1718/68
Int. Cl. B03b 3/04
U.S. Cl. 209—459 7 Claims



An apparatus for concentrating ore and the like material having two chutes joined by a ridge-shaped portion and

running in adjacent parallel relation and helically about a substantially vertical axis. The outer chute carries a mixture of a liquid and the material to be concentrated, and the inner chute carries the liquid by means of which the concentration is effected, the liquid being transferred from the inner chute to the outer chute by the centrifugal force. A groove is arranged in the ridge-shaped portion. A band which may have through holes is inserted in the groove and its projection from the groove is adjustable. The band serves as an adjustable overflow to enable precise control of the transfer of the liquid from the inner chute to the outer chute at successive portions along the length of the chutes.

3,568,833
ION EXCHANGE METHOD AND APPARATUS
Henricus S. H. Ritzen, Rijswijk, Netherlands, assignor to Machinenfabrick Reineveld N.V., Delft, Netherlands
Filed Oct. 21, 1968, Ser. No. 769,067
Claims priority, application Netherlands, Oct. 19, 1967, 67.14199
Int. Cl. B01d *15/04*
U.S. Cl. 210—35 **4 Claims**

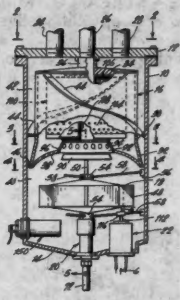


A method of continuously treating a liquid with an ion exchanger material contained in vessels being alternately in service by providing in each vessel an amount of ion exchanger material being in small excess as compared with the required amount for treating the volume of liquid that has to be treated during the time required for regenerating and washing a corresponding amount of ion exchanger material.

3,568,834
FILTERING ALKALINE METAL CLEANER
Lyle G. Treat, Ferguson, Mo., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 5, 1969, Ser. No. 874,418
Int. Cl. B08b *3/10*
U.S. Cl. 210—71 **12 Claims**

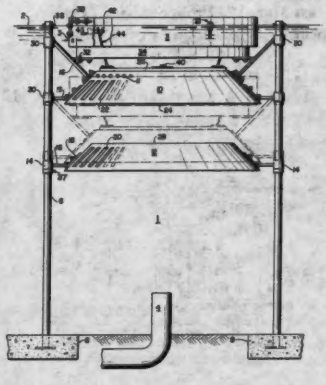
Process of fine filtering an alkaline metal cleaner containing emulsified soluble oil in which the requisite amount of aminopolyacetic acid or ammonium or alkali metal salt thereof is added to the cleaner periodically to maintain unchelated hardness in the range of zero to about 400 p.p.m. hardness expressed as $CaCO_3$, and up to 2 percent by weight of free polyacetic acid or ammonium or alkali metal salt thereof, and the cleaner is filtered through a medium capable of removing solids larger than about 0.1 to 10 microns major dimension.

3,568,835
LIQUID SEPARATOR AND FILTER UNIT
Holger M. Hansen, Ann Arbor, Mich., assignor to The International Marketing Corporation, Detroit, Mich.
Filed July 1, 1968, Ser. No. 741,401
Int. Cl. B01d *35/14*
U.S. Cl. 210—86 **12 Claims**



An apparatus for separating water and other foreign material from a liquid such as diesel fuel and then filtering the fuel comprises a container having an inlet at its upper end for the liquid to be treated and means for subjecting the incoming liquid to the action of sufficient centrifugal force to separate water and heavier dirt particles from the fuel and cause the water and dirt particles to settle into the lower portion of the container. The fuel is then caused to flow upwardly through a valve to a final filter and is discharged from an outlet in the container. A float in the lower portion ot the container has a density between that of water and the fuel and controls the opening and closing of the valve. As the float rises due to the accumulation of water in the bottom of the container the valve closes off the flow of fuel to the filter to prevent the delivery of contaminated fuel to the engine. The float also operates a warning signal to indicate the imminence of the closing of the valve, as well as an exit valve, previously opened, to provide a drain for the water and other materials which have been separated from the fuel.

3,568,836
SEWAGE TREATMENT UNIT
Bartow Ray, McLean, Va., assignor to Future Products Development Corporation, McLean, La.
Filed Mar. 28, 1969, Ser. No. 811,411
Int. Cl. B01d *21/14*
U.S. Cl. 210—86 **7 Claims**



A unit for collecting floating solids from sewage ponds comprising a frame with a vertically slideable float and col-

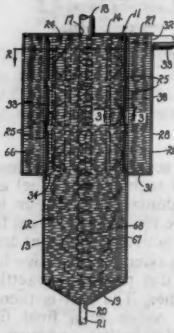
lection bin therein and a guide means, all positioned above a sewage inlet to trap solids in the collection bin. The added buoyancy raises the float out of the water when the bin is filled.

3,568,837

DEVICE FOR SEPARATING PARTICULATE MATTER FROM A STREAM OF FLUID

Claude C. Laval, Jr., Fresno, Calif., assignor to A. V. Electronics, Inc.

Continuation-in-part of application Ser. No. 478,177, Aug. 9, 1965, now abandoned. This application July 24, 1967, Ser. No. 656,312
Int. Cl. B01d *21/26*
U.S. Cl. 210—136 9 Claims



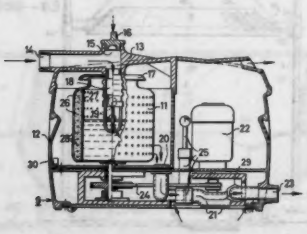
A centrifuging device having particular utility in separating particulate matter from a fluid stream, characterized by a stream jetting orifice and means for directing a stream along a swirling path as it is jetted from the orifice, a particular feature of the device being a resilient lip supported adjacent to the orifice and adapted to vary the effective dimension of the orifice in response to variations occurring in the flow characteristics of the stream for insuring a jetting of the stream over a wide range of streamflow characteristics.

3,568,838

SEWERAGE SYSTEM FOR HOUSES, PARTICULARLY IN RURAL AREAS

Wolter Appelgren, Saltsjobaden; Jan-Olov Jorsback, Enskede; Gudmund Naeslund, Bromma, and Ernst Rolf Olsson, Vallingby, Sweden, assignors to AB Landsbygdens Frilidsbebyggelse, Stockholm, Sweden and Viak AB Vallingbyplan, Vallingbys, Sweden

Filed Mar. 19, 1968, Ser. No. 714,206
Claims priority, application Sweden, Mar. 23, 1967, 4134/1967
Int. Cl. B01d *33/06*
U.S. Cl. 210—136 12 Claims



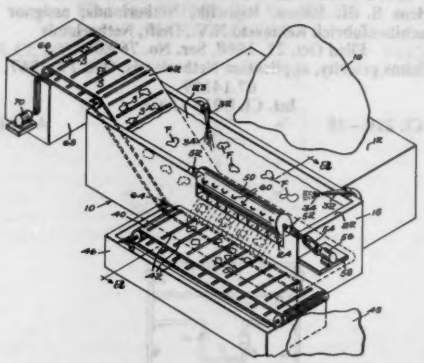
A sewerage system for houses comprises a mechanical strainer, preferably of the centrifugal filter type, for immediate and efficient separation of solid and semisolid impurities from the waste water before the latter is pumped out through a narrow sewer. Mechanical strainer and pump form a convenient installation unit. A replaceable or renewable filter is included in the mechanical strainer.

3,568,839

APPARATUS FOR SEPARATING AND REMOVING FLOATABLES

John V. Dunlea, Jr., Wellesley, Mass., assignor to Seadun, Inc.

Filed Feb. 14, 1969, Ser. No. 799,413
Int. Cl. B01d *21/12*
U.S. Cl. 210—152 4 Claims



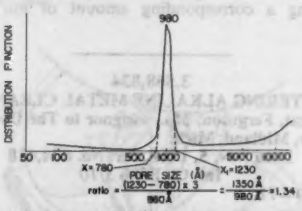
Apparatus for removing floatable matter (commonly referred to as "floatables") from rubbish prior to the subsequent treatment thereof. The rubbish is deposited in a water-filled tank and the water is agitated to break up and thoroughly wet all particles. The floatables are swept over a spillway onto a first conveyor exterior of the tank, which conveyor removes the floatables to another location for further processing. A second conveyor removes that portion of the rubbish which sinks to the bottom of the tank.

3,568,840

PACKING MATERIALS FOR GEL PERMEATION CHROMATOGRAPHY

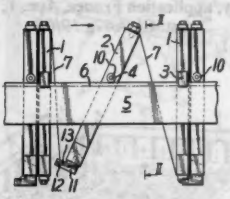
Atsushi Hashimoto, Yokohama-shi, Japan, assignor to Mitsubishi Kasei Kogyo Kabushiki, Kaisha, Tokyo-to Japan

Filed Dec. 24, 1968, Ser. No. 786,641
Claims priority, application Japan, Dec. 30, 1967, 42/84765
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 13 Claims



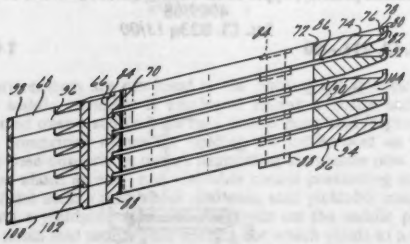
Packing material to be packed in columns of gel permeation chromatographic devices. The packing material comprises alumina having a particle size ranging from 10 to 70 microns, a distribution peak ranging from 10 to 10^5 Angstrom units, and a ratio of the bottom extent of the sharp portion of the pore size distribution curve to the distribution peak of less than 2.

3,568,841
APPARATUS FOR RELEASING FILTER CAKE IN FILTER PRESS
Ken-Ichiro Kurita, 36-4-5-Chome, Senriyama-nishi, Suita Osake Prefecture, Japan
Filed Jan. 12, 1970, Ser. No. 2,273
Int. Cl. B01d 25/12
U.S. Cl. 210—225 4 Claims



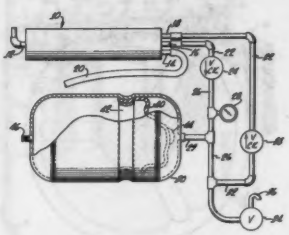
In a filter press of plate-and-frame type which comprises filter plates and filter frames alternately arranged with filter cloth disposed between adjacent surfaces and in which the filter plates are adapted to be separated from the filter frames after filtration, filter frames are supported movably by pivot members on side bars for supporting filter plates and adapted for pivotal movement about the pivot members. Filter cloth attached to the upper end of each filter frame is connected to the lower end of the preceding filter plate while filter cloth attached to the lower end of the filter frame is connected to the upper end of the following filter plate. When the filter plate is separated, the filter frame is thereby pivotally moved into inclined position by being pulled by the filter cloth to permit the cake to drop from the interior of the frame.

3,568,842
APPARATUS FOR SEPARATING MIXTURES OF IMMISCIBLE LIQUIDS
John W. Bozek, 6093 Waterfront Drive, Waterford, Mich.
Filed Mar. 11, 1969, Ser. No. 806,205
Int. Cl. B01d 29/42, 25/00
U.S. Cl. 210—307 6 Claims



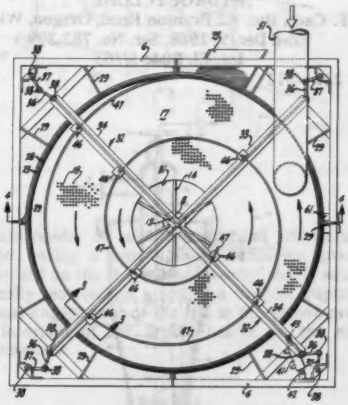
A separator element construction; for use in the continuous separation of mixtures of immiscible liquids when the mixture flows through the element such as for separation of water from turbine engine fuel, wherein a plurality of ring members are stacked to form a hollow chamber with shaped slots communicating from the interior to the exterior of the chamber and wherein, the upper surface of each slot is oleophilic and the lower surface of each slot is hydrophilic and is connected to a hydrophilic drain surface to permit the water that collects on the hydrophilic surface to drain to a sump without interferring with the expelled water-free fuel when the mixture is forced through the slots.

3,568,843
WATER STORAGE SYSTEM FOR REVERSE OSMOSIS PURIFICATION UNIT
Ross M. Brown, Palos Verdes Estates, Calif., assignor to Desalination Systems, Inc., San Diego, Calif.
Filed Dec. 6, 1968, Ser. No. 781,912
Int. Cl. B01d 31/00
U.S. Cl. 210—321 7 Claims



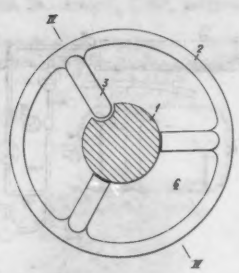
Pressure in a tank for storing water purified by a reverse osmosis unit is relieved at a predetermined proportionate pressure level by providing a connection from water in said tank to a restricted elongated flow channel used for control of brine release and pressure control in the reverse osmosis unit. Connection to the flow control channel is made at a point intermediate its ends and preferably at a point closer to the brine release end. The flow control channel may be formed by a spiral groove in a face of one element maintained in contact with an adjoining face of another element, with the tank pressure relief connection at a point preferably from one-tenth to one-half the length of the channel measured from its brine release end.

3,568,844
MACHINE FOR SEPARATING JUICE FROM CRUSHED GRAPES
Robert J. Coffelt, Sacramento, and George R. Giannini, Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.
Filed June 24, 1969, Ser. No. 836,018
Int. Cl. B01d 33/24
U.S. Cl. 210—327 6 Claims



A machine separates juice from crushed grapes by receiving the crushed grapes on a perforated table revolving on a frame relative to a spiral wall supported by the frame close to the table. The wall may be moved laterally relative to the table. The juice is caught beneath the table and the pomace is discharged. The pomace can be further treated on one or more subsequent, similar table and spiral wall unit or units.

3,568,845
FILTER CANDLE FORMED BY STACKED ELEMENTS
Lino Llamas, Alvarez deBaena 7, Madrid, Spain
Filed July 10, 1968, Ser. No. 743,689
Claims priority, application Spain, July 19, 1967, 343.183
Int. Cl. B01d 25/16
U.S. Cl. 210—488 2 Claims

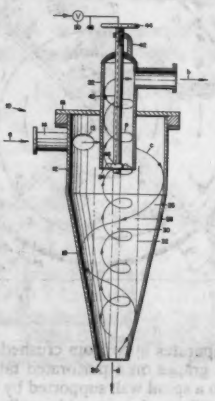


A stack of elements for a filtering candle in which each of the elements comprises an outer ring portion and a plurality of radially inwardly extending spokes defining between themselves openings axially aligned with each other and spacer means spacing the ring portions in axial direction from each other, in which the spacer means are located radially inwardly of the ring portions.

3,568,846
PLASTIC FILTER MEDIA
Albert J. Haefner, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Apr. 29, 1968, Ser. No. 725,168
Int. Cl. B01d 39/04
U.S. Cl. 210—506 6 Claims

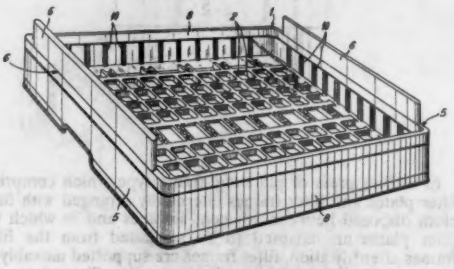
An improved filter media is prepared by subjecting particles of a plastic material having discrete, irregular, nonuniform shaped surfaces to treatment with a quantity of a surfactant or wetting agent sufficient to permit the plastic particles to be readily wetted by water.

3,568,847
HYDROCYCLONE
Wayne F. Carr, Rte. #2 Branson Road, Oregon, Wis. 33575
Filed Dec. 9, 1968, Ser. No. 782,309
Int. Cl. B04c 5/103
U.S. Cl. 210—512 3 Claims



A means and method for controlling the separation of particles or contaminates from liquid mixtures, within a hydrocyclone by mechanically effecting a shifting of the transition zone or point between the free and forced vortex paths in a manner so as to increase or decrease the centrifugal force without significantly changing the through put.

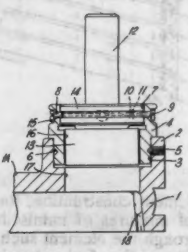
3,568,848
DISH TRAY
Guy Tzifkansky, 16 rue Ronsard a 91, Montgeron, (Essonne), France
Filed Mar. 26, 1969, Ser. No. 810,493
Claims priority, application France, Apr. 1, 1968, 146,670
Int. Cl. A47g 19/08
U.S. Cl. 211—41 3 Claims



A dish tray having a shape of a parallelepiped pan and an apertured bottom, two sidewalls carrying on their upper edges a pair of projecting upstanding flanges, plates adapted to act as screen means to prevent the splashing of wash water or rinsing water from another treatment station of the dishwasher, and adapted to be disposed normally to the axis along which the tray is driven in the corresponding dishwashing machine.

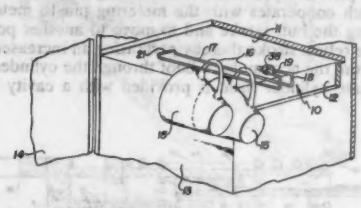
The sidewalls are hollow and open at the bottom to permit stacking of a plurality of superposed trays, for storing up the dishes, by causing flanges of an underlying tray to fit into the corresponding hollow walls of the tray above.

3,568,849
TOOLHOLDING DEVICES
James M. Hutchison, Deptford, England, assignor to Molins Machine Company Limited, London, England
Filed Jan. 17, 1969, Ser. No. 791,934
Claims priority, application Great Britain, Jan. 31, 1968, 4909/68
Int. Cl. B23q 13/00
U.S. Cl. 211—60 1 Claim



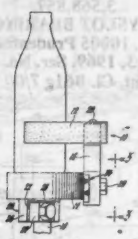
A cutting tool is held in a carrier having a circumferential groove. The tool and the carrier are retained in an annular member by means of pin elements in the annular member which are spring loaded inwards into the groove. A plurality of such annular members are carried in a tool magazine.

3,568,850
CUP HANGER
Joseph M. Rogers, 1845 Highcrest Place, Brooklehurst Kamloops, British Columbia, Canada
Filed Mar. 28, 1969, Ser. No. 811,315
Int. Cl. A47g 29/00
U.S. Cl. 211—71 2 Claims



A hanger having a base portion and an article supporting portion which are parallel and extend in the same direction away from a connecting bracing portion, the base portion being securable to a first support with the bracing portion engaging a second support at right angles to the first support.

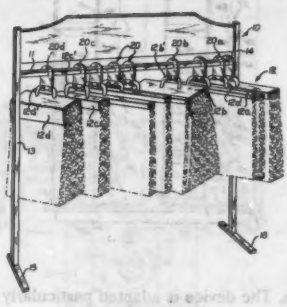
3,568,851
YIELDABLE ANTIROTATIONAL MEANS AND METHOD FOR A BOTTLE SUPPORT
Anthony R. Schafer, Detroit, Mich., assignor to Deba Zacharia doing business as Dee-Ton Engineering, St. Clair Shores, Mich.
Filed Sept. 12, 1968, Ser. No. 759,475
Int. Cl. A47b 73/00
U.S. Cl. 211—74 15 Claims



Improvements are disclosed in the bottling art in which a bottle saddle assembly is employed having a bottle saddle supported over a saddle base by a saddle post; said improvements comprising means for holding the saddle post on the saddle base comprising means supporting the saddle post for rotation about an axis, and yieldable means preventing rotation of the saddle post about said axis, said yieldable means applying a yieldable antirotational force on the saddle post which holds said saddle post upright but which yields to a superior rotative force which would otherwise break parts of said saddle assembly.

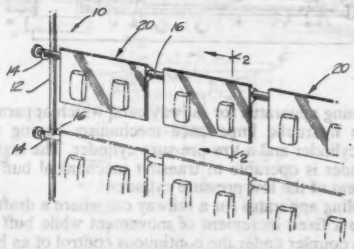
3,568,852
SLIDING CARRIER MEANS
Fred Howard, New York, N.Y., assignor to Howard Displays, Inc., New York, N.Y.
Filed July 5, 1968, Ser. No. 742,884
Int. Cl. A47g 25/06
U.S. Cl. 211—113 1 Claim

Accessories for racks or like supports consist of one or more carrier elements each capable of maintaining and retaining in slant position a sample book or a holder of carpet pieces, tile assemblies and the like, whereby the carrier element or elements may be readily and easily shifted along a polygonal-shaped support bar while the elements assume a



predetermined angularity with respect to the support bar, as necessitated by the dimensions of the sample books.

3,568,853
ARTICLE HOLDER FOR USE IN DISPLAY RACK
Hans J. Feibelman, 11 Baldwin Orchard Drive, Cranston, R.I.
Continuation of application Ser. No. 621,246, Mar. 7, 1967, now abandoned. This application Aug. 14, 1969, Ser. No. 850,266
Int. Cl. A47f 7/92
U.S. Cl. 211—113 3 Claims

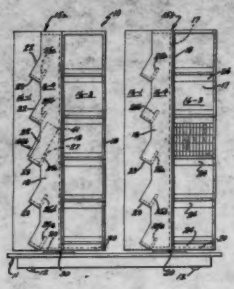


An article holder on which ornamental articles are displayed and having a longitudinally extending groove integrally formed on the rear surface thereof that is adapted to be frictionally received on a rod of a counter display rack, the frictional engagement of the rod in the groove providing for easy insertion of the article holder on the rod and removal therefrom.

3,568,854
VENDING AND DISPLAY DEVICE
Norman R. Welch, 905 Bailey Park N.E., Grand Rapids, Mich.
Filed Dec. 19, 1968, Ser. No. 785,180
Int. Cl. A47f 5/02
U.S. Cl. 211—163 13 Claims

A device for vending and displaying products, particularly cigarettes, including a plurality of cabinet members mounted in rotatable fashion upon a suitable base member. Each of

the cabinets contains a series of vertically spaced shelves, the shelves being adapted to receive cigarette cartons in gravity-



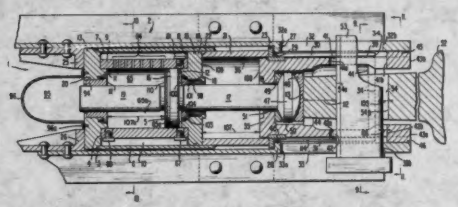
feed position. The device is adapted particularly for vending the individual cigarette packages singly as opposed to entire cartons.

3,568,855

HYDRAULIC CUSHIONING APPARATUS FOR RAILWAY CARS

Orum E. Seay, and Robert Q. Shelton, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 27, 1968, Ser. No. 732,236
Int. Cl. B61g 9/08
U.S. Cl. 213—8 **13 Claims**



Cushioning apparatus for railway cars, which apparatus includes an hydraulic impedance mechanism having a high pressure cylinder and a low pressure cylinder. The high pressure cylinder is operable to transmit mechanical buff shock independent of the low pressure cylinder.

A coupling apparatus for a railway car where a draft key is limited to a fixed increment of movement while buff movement of a coupler under the continuous control of an hydraulic impedance mechanism takes place over an increment exceeding the length of the fixed movement increment of the draft key.

A method and apparatus for cushioning forces imposed on a railway coupling wherein draft key movement is limited to a first increment, hydraulically controlled buff movement of a coupler takes place over a second increment exceeding the length of the first increment, and mechanical force is transmitted through a high pressure cylinder of an impedance mechanism, substantially to the exclusion of forced transmission through a low pressure cylinder.

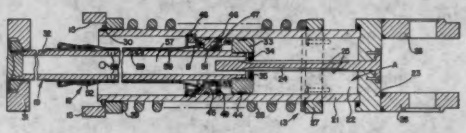
3,568,856

HYDRAULIC CUSHIONING DEVICE FOR RAILWAY CARS

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 22, 1969, Ser. No. 843,429
Int. Cl. B61g 9/08, 9/16
U.S. Cl. 213—43 **10 Claims**

A double-acting hydraulic cushioning device for railway cars is formed with a hydraulic fluid filled cylinder having a closed end and an open end through which a piston rod is movable for reciprocating a piston within the cylinder. A flexible accumulator boot is connected to the piston rod and to an intermediate cylinder head for closing the end of the cylinder. A metering pin cooperates with the piston for providing a relatively constant metered flow from the cylinder to the accumulator during the buff stroke on the unit. The piston is provided with a sliding valve and orifice plate which cooperates with the metering pin to meter the flow during the buff stroke and to move to another position during the return stroke thereby permitting an increased flow of fluid from the accumulator boot through the cylinder. The intermediate cylinder head is provided with a cavity which



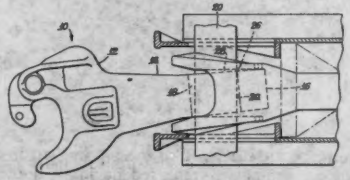
contains a fluid pressure responsive valve slidable to open passages leading from the accumulator boot to the cylinder and in a return and draft stroke of the piston the valve being movable over the passages to restrict the flow therethrough. The valve plate and the piston has a configuration which permits misalignment of the piston relative to the axis of the cylinder without affecting the metering operation. Further, the piston is provided with a piston ring engaging the cylinder wall with the piston ring groove on the piston being designed to permit misalignment without affecting the sealing relation of the piston ring. The slidable valve plate within the recess or cavity of the intermediate cylinder is also of a flexible construction which in the event of misalignment does not impair its functional operation.

3,568,857

COUPLER KEYSLOT BEARING CONTOUR

Russell George Altherr, 10005 Prudential Plaza, Chicago, Ill.

Filed July 3, 1969, Ser. No. 838,776
Int. Cl. B61g 7/00
U.S. Cl. 213—64 **9 Claims**



An improved keyslot bearing contour for a railroad coupler shank is disclosed. The keyslot contour comprises a plurality of arcs which are designed to minimize localized bearing on the keyslot during angular pull of the coupler. The improved keyslot contour is formed by a first arc, rearwardly extending towards the butt end of the coupler, which terminates in a plurality of second arcs located at each side of the coupler in proximity to the intersection of the keyslot with the side walls of the coupler.

3,568,858

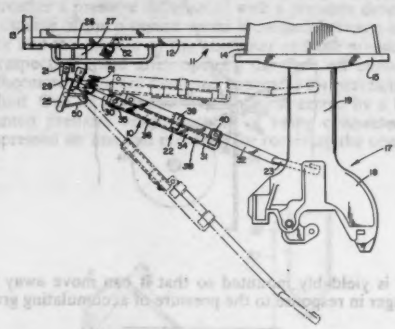
UNCOUPLING ROD ASSEMBLY

Leonard F. Manyek, Lansing, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Jan. 9, 1969, Ser. No. 790,062
Int. Cl. B61g 3/08
U.S. Cl. 213—166 **4 Claims**

An uncoupling rod assembly for railway vehicles having cushioning incorporated therein. The assembly includes

telescoping members to accommodate the length of travel and swinging movement of the couplers. The telescoping



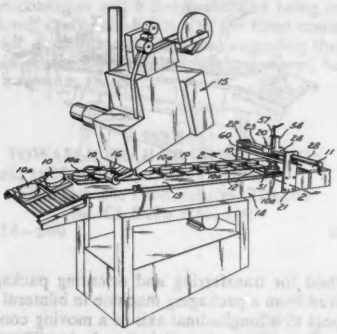
members are formed from relatively thin stock to reduce the weight of the uncoupling rod assembly.

3,568,859

ALIGNING MEANS FOR PACKAGE LABELING

Stanley E. Truesdell, Mentor, Ohio, assignor to Avery Products Corporation

Filed Dec. 5, 1968, Ser. No. 781,331
Int. Cl. B64g *47/28*
U.S. Cl. 214—1 **4 Claims**



A machine for transferring and orienting packages which are received from a packaging machine in bilateral symmetry with respect to a longitudinal axis of a moving conveyor and which are then delivered to a labeling device. The machine includes a vacuum head transfer means which picks up each package in one longitudinal row and transfers each such package to a space between its bilaterally symmetrical package and a following package so that the packages are aligned in single file. During such transfer, the head rotates the package on a central axis normal to the conveyor so that the packages are uniformly oriented with respect to each other for proper feeding to the labeling device.

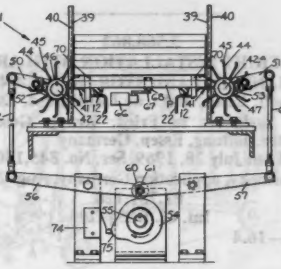
3,568,860

STACKING OR TIERING DEVICE

Philip G. Rawlins, Sinking Spring, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Feb. 17, 1969, Ser. No. 799,727
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 **10 Claims**

A device for forming a stack of relatively thin articles or packages delivered in succession. The device includes a plurality of paddle wheels on opposite sides of a package delivery conveyor with individual blades of a succession thereof on each wheel positioned to underlie the margin of a package delivered by the conveyor. Upon completion of the delivery the paddle wheels are rotated or indexed in a direction to elevate the package by the underlying blades and position succeeding blades for receiving a second package.



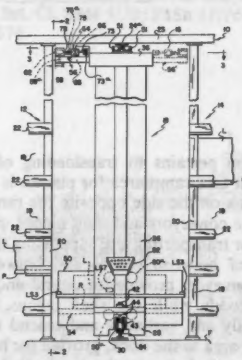
Upon further indexing movement of the paddle wheels the initial package is again elevated until the blades performing such function withdraw past the edges of the package and permit the package to drop onto the package supported by the blades therebelow. At the same time other blades of the successions are positioned to receive a third package. The operation is continued until a stack of packages of the desired number has been obtained.

3,568,861

POSITIVE LOCATING DEVICE FOR LOAD CARRIER IN AUTOMATIC WAREHOUSING SYSTEM

Wayne G. Atwater, Willoughby, and Sanford Saul, Cleveland, Ohio, assignors to The Triax Company, Cleveland, Ohio

Filed Oct. 2, 1968, Ser. No. 764,504
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 **10 Claims**



An automatic warehousing system comprising a storage structure defining a plurality of load handling storage locations and an automatic load carrier movable alongside the storage structure for delivering loads to and/or picking up loads from the load storage locations. Automatic locating means is provided adapted for movement from an inactive position to an active position, for coaction between the storage structure and the load carrier to mechanically couple the load carrier in predetermined position with respect to a selected one of the storage locations, so that the laterally movable extractor of the load carrier will be in proper position with respect to the selected load storage location for in-

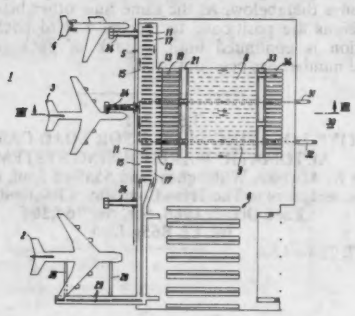
serting a load into or removing a load from the selected location. Circuit means is provided with control means in the circuit means so that the load carrier cannot be energized to move longitudinally with respect to the storage structure when the locating means is in its activated position between the storage structure and the load carrier, with such circuit means also including means for permitting extractor movement only when the locating means is in its activated position.

3,568,862

AIR FREIGHT INSTALLATION WITH ARTICLE HANDLING AND STORAGE MEANS

Klaus Walkhoff, Essen, and Uwe Lichtenford, Essen-Werden, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed July 28, 1969, Ser. No. 845,190
Claims priority, application Germany, Aug. 27, 1968, P1,781,120
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 15 Claims



The invention pertains to transloading of air freight in which, adjacent to a ramp area for planes, is a building having a truck dock on the side opposite the ramp area. Within the building are conveyors and shelf means, preferably roller shelf means, for transporting and supporting the goods during transfer thereof between planes and between planes and trucks. The conveyors provide for lateral and vertical movement of the goods while the shelf means, which are distributed laterally and vertically and extend in the direction from the ramp area to the dock, provide for horizontal movement of the goods between the truck dock and the ramp area.

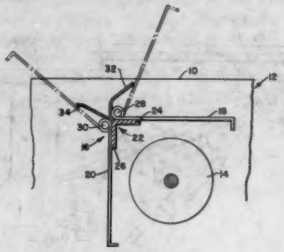
3,568,863

SAFETY SHIELD FOR COMBINE GRAIN TANK AUGER

Helmut Rohwedder, Mittelbach; Eberhard Podleska, Bierbach, and Kurt Buhler, Zweibrueken, Germany, assignors to Deere & Company, Moline, Ill.

Filed July 3, 1969, Ser. No. 838,797
Claims priority, application Germany, Dec. 4, 1968, P 18 12 571.8—23
Int. Cl. B60p *1/40*
U.S. Cl. 214—83.32 6 Claims

A safety shield is provided for the grain tank, for example, of a combine so as to protect the operator from injury. The



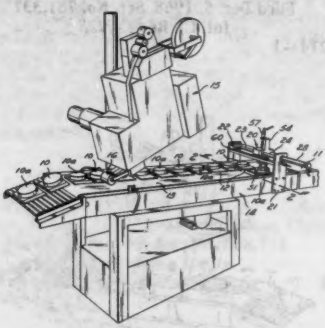
shield is yieldably mounted so that it can move away from the auger in response to the pressure of accumulating grain.

3,568,864

ALIGNING METHOD FOR PACKAGE LABELING

Stanley E. Truesdell, Mentor, Ohio, assignor to Avery Products Corporation

Original application Dec. 5, 1968, Ser. No. 781,331. Divided and this application Dec. 10, 1969, Ser. No. 880,520
Int. Cl. B65g *47/24*
U.S. Cl. 214—152 3 Claims



A method for transferring and orienting packages which are received from a packaging machine in bilateral symmetry with respect to a longitudinal axis of a moving conveyor and which are then delivered to a labeling device. The method includes the steps of picking up each package in one longitudinal row and transferring each such package to a space between its bilaterally symmetrical package and a following package so that the packages are aligned in single file. During such transfer, the package is rotated on a central axis normal to the conveyor so that the packages are uniformly oriented with respect to each other for proper feeding to the labeling device.

3,568,865

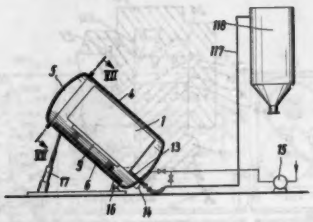
METHOD AND APPARATUS FOR EMPTYING CONTAINERS FILLED WITH BULK, LIQUID OR PASTY MATERIAL

Gunter Willmroth, Porz/Urbach, Germany, assignor to Wilhelm Hermanns KG, Porz/Urbach, Germany

Filed Feb. 6, 1969, Ser. No. 797,199
Claims priority, application Germany, Nov. 6, 1968, P 18 295.2
Int. Cl. B65g *65/40*
U.S. Cl. 214—310 12 Claims

There is disclosed a method for emptying containers filled with bulk, liquid or pasty material, wherein the filled container is placed into a pressure vessel, the interior of the container is connected with that of the pressure vessel, and a

connection capable of being shut off which extends through the wall of the pressure vessel and permits the flowing off of the material disposed in the container is provided between the container and a site outside of the pressure vessel, whereafter a pressure differential with a pressure drop to the site outside of the pressure vessel is created between said exterior and the interior of the container and the pressure vessel respectively and after opening the flow off connection. Furthermore there are disclosed apparatus for practicing said method. One of said apparatus is characterized by a tiltably mounted pressure vessel capable of being connected to a compressed air line and provided for receiving the container,



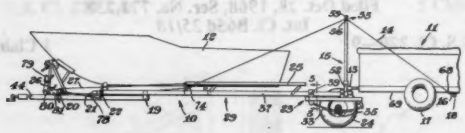
the interior of said pressure vessel being capable of being connected with that of the container and a flow off line capable of being connected with the lower end of the interior of the tilted container extending through the wall of said pressure vessel. Another of said apparatus is characterized by a tiltably supported pressure vessel in communication with atmosphere and provided for receiving the container, the interior of said pressure vessel capable of being connected with that of the container and a line capable of being connected with the lower end of the interior of the tilted container and provided for discharging the material extending through the wall of said pressure vessel, said line capable of being connected to a vacuum source.

3,568,866

TOWABLE TRAILER COMBINATION

Glenn Black, 1007 Wilson St., Bay City, Mich.

Filed Oct. 24, 1968, Ser. No. 770,263
Int. Cl. B60p *3/10, 3/40*
U.S. Cl. 214—500 **10 Claims**



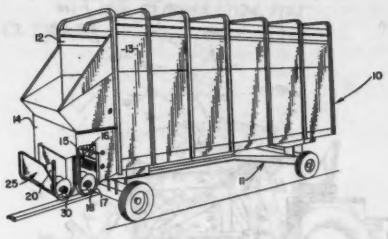
A smaller two-wheeled trailer is mounted behind and suspended from a larger two-wheeled trailer, with the wheels of the smaller slightly above ground level, in easily and controllably disconnectable combination. The smaller trailer has the tongue removed and ordinarily stowed out of the way for subsequent separate use of the trailer. Short rigid support members extend forwardly from the smaller trailer and are attached to the back of the larger trailer so as to be pivotal in at least the vertical plane while attached. Flexible support means extend down and back from upstanding support members on the larger trailer to attaching means on the smaller trailer. Taking in the flexible support means or moving the upper end of the upstanding support means forward raises the smaller trailer off the ground, in which position it becomes legally transportable in combination with the larger trailer which is preferably provided with a longitudinally slidably adjustable axle assembly.

3,568,867

CONVEYOR EXTENSION

Peter Sammarco, Bellwood; Robert W. Sanderson, III, Lombard, and Arnold Zimmerman, Downers Grove, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 5, 1969, Ser. No. 804,578
Int. Cl. B60p *1/40*
U.S. Cl. 214—522 **6 Claims**



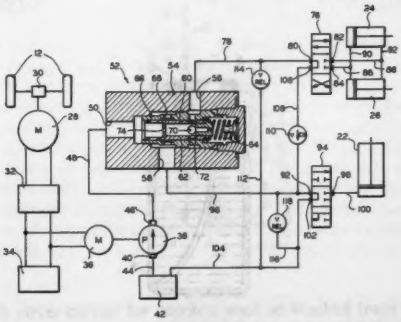
An extension for an auger-type cross conveyor of a conventional self-unloading wagon wherein the extension includes an auger supported in a trough pivotally mounted on the wagon box for swinging movement about horizontal and vertical axes. The auger of the cross conveyor and the auger of the extension are provided with universal joint sections providing a driving connection therebetween which accommodates pivoting movement of the extension about the horizontal axis. The universal joint sections are separable upon swinging the extension about the vertical axis to a transport position.

3,568,868

HYDRAULIC SYSTEM FOR A LIFT TRUCK

Willard L. Chichester, Battle Creek, Mich., assignor to Clark Equipment Company

Filed Sept. 8, 1969, Ser. No. 855,950
Int. Cl. B66f *9/20*; F15b *11/16*
U.S. Cl. 214—674 **8 Claims**

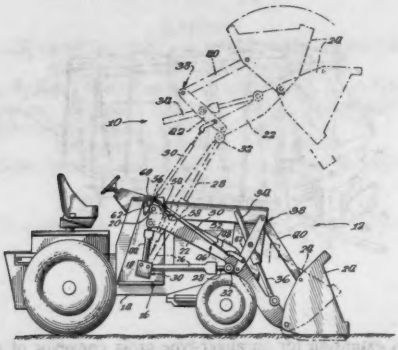


A hydraulic system for use in a lift truck. A single pump supplies fluid to a flow priority valve which supplies fluid up to a predetermined flow to an upright tilt circuit and supplies any fluid above the predetermined flow to an upright lift circuit. The tilt circuit is connected to the lift circuit by a one-way valve so that the entire flow from the pump can be supplied to the lift circuit.

3,568,869
ANTI-ROLLBACK MECHANISM

Gary L. Beiley, Terre Haute, Ind., and Gary A. Dickman, Milwaukee, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Jan. 9, 1969, Ser. No. 790,050
Int. Cl. E02f 3/30
U.S. Cl. 214—764 10 Claims



A loader unit mounted on a tractor and including pivotally mounted lift arms on which there is pivotally supported a bucket controlled by a hydraulic circuit including a bucket control cylinder. The loader unit includes an antirollback mechanism incorporating a control member and a control link. The control member is moved relative to the link in response to movement of the bucket control operating lever; and the control link is movable relative to the control member by raising and lowering of the lift arms and pivoting of the bucket relative to the lift arms so that the link engages the control member to prevent rollback of the bucket when the bucket and the arms are in position to permit rearward dumping of the bucket.

3,568,870
PLASTIC BOTTLE WITH SELF-CONTAINED DRINKING TUBE

Edward R. Elston, 1691 E. Granda Court, Ontario, Calif.

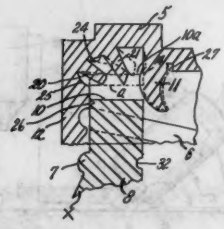
Filed Mar. 3, 1969, Ser. No. 803,617
Int. Cl. B65d 77/28
U.S. Cl. 215—1 1 Claim

A plastic bottle having a reduced neck with a filling opening therein is formed with an apertured cup-shaped well crimped thereto and arranged within the opening and through which a curved drinking tube projects into the bottle. The filling opening is closed by a flat cap crimped thereto and below which the apertured well is spaced so that the upper end of the tube is concealed therein and is movable upwardly therethrough when the cap is removed for drinking purposes.

3,568,871
CLOSURE CAP

Jay G. Livingstone, 715 W. Market St., Akron, Ohio

Continuation-in-part of application Ser. No. 701,524, Jan. 8, 1968, now Patent No. 3,494,496, and a continuation-in-part of 797,922, Feb. 10, 1969, now abandoned. This application May 12, 1969, Ser. No. 823,742
Int. Cl. B65d 41/28, 41/16
U.S. Cl. 215—40 4 Claims



A flexible cap is designed to make a tight seal with a bottle or the like. The cap may be either a snap-on or a screw-on cap. There are two annular tonguelets which extend down from the top of the cap, and preferably there is also an annular tongue. The tongue and tonguelets are concentric. The tonguelets are brought into pressure contact with the top surface of the wall of the bottle when the cap is in place on the bottle, and the tongue makes pressure contact with the inner top edge and/or the inner surface of the wall of the bottle. The tonguelets meet the top of the wall at an angle and when they are in pressure contact with this wall they are flexed. When both tonguelets are inclined inward, the outer tonguelet makes a greater angle with the skirt of the cap than the inner tonguelet so that when the tonguelets are flexed inward against the top of a bottle there is more room for the outer tonguelet to flex inward than if both tonguelets were parallel.

3,568,872
INSULATED PLASTIC CONTAINER

James C. Logomasini, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

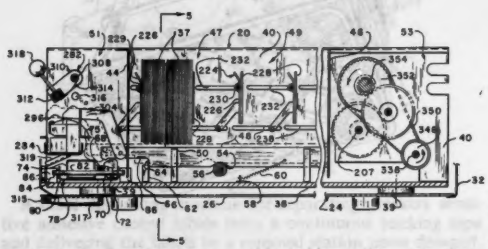
Filed Oct. 28, 1968, Ser. No. 771,238
Int. Cl. B65d 25/18
U.S. Cl. 220—9 1 Claim

A double walled container wherein at least one of the enclosed sides of the opposing walls has a portion of its surface provided with a foam covering associated with said wall.

3,568,873
APPARATUS FOR THE SELECTION OF CODED ELEMENTS FILED AT RANDOM

Laurence Allan Cross, Jr., Lambertville, N.J., assignor to Randomatic Data Systems, Inc., Trenton, N.J.

Original application Mar. 9, 1965, Ser. No. 438,216, now Patent No. 3,486,617, Continuation-in-part of application Ser. No. 272,485, Apr. 11, 1963, now Patent No. 3,292,631, Continuation-in-part of application Ser. No. 280,964, May 16, 1963, now Patent No. 3,303,492, Continuation-in-part of application Ser. No. 287,275, June 12, 1963, now Patent No. 3,231,186. Divided and this application May 9, 1969, Ser. No. 840,080
Int. Cl. B65d *25/06*
U.S. Cl. 220—22.5 9 Claims

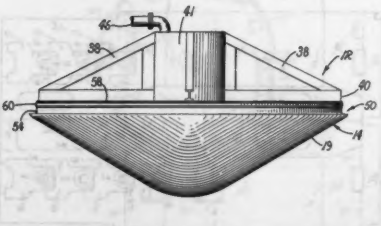


A fixed and a movable divider detect and self-adjust to the thickness of a card deck, and grip the cards tightly between them. Whatever the variable distance may be between the dividers when gripping the cards, the movable divider is backed off to a card-releasing position over a further distance which is a constant, such that the deck is always loosened to the same degree without regard to its thickness. A shoe contactor rolls a locking shoe of the movable divider along a trackway to shift the movable divider to its card-releasing position, and by pressure against the shoe locks the movable divider in that position.

3,568,874
PRESSURE SEAL

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Ewald Heer, La Canada; Calvin M. Beylik, Glendora; John A. Garba, Los Angeles, and Frank W. Orlik, Manhattan Beach, Calif.

Filed Apr. 14, 1969, Ser. No. 815,760
Int. Cl. B65d *53/02*
U.S. Cl. 220—46 5 Claims

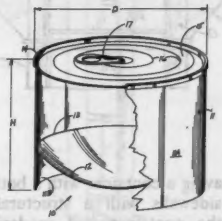


A pressure seal particularly suited for use in establishing a seal between a hermetically sealed test specimen and an associated test fixture disposed within an environmental test chamber, for purposes of subjecting the specimen to changing conditions of pressure and temperature, characterized by a rigid sealing member circumscribing an opening through which a vacuum is drawn, and an annular skirtlike, flexible sealing member formed of resilient and impervious material depending from the test fixture in circumscribing relationship with the rigid member in a manner such that pressure may be delivered from the specimen to the chamber, as a given positive pressure is established within the specimen, and a hermetic seal established therebetween as a given reduced pressure is established within the specimen for purposes of duplicating contemplated pressure conditions as may be encountered by a space craft as it approaches a celestial body enveloped in an atmosphere.

3,568,875
COMBINATION PET FOOD CONTAINER AND DISPENSER

Edward Olan, 33 Piper Drive, Searington, N.Y.

Filed Apr. 9, 1969, Ser. No. 814,735
Int. Cl. B65d *17/24, 7/42*
U.S. Cl. 220—54 7 Claims

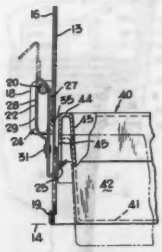


This disclosure is directed to a combination pet food container and dispenser in which the bottom of the container is concave or dish shaped so that a pet or animal may feed directly from the container in which the pet food is packaged and distributed. The container is also provided with a readily removable lid which hermetically seals the contents of the container until used, and is constructed so that the open edge of the container is devoid of sharp edges when used as a feeding dispenser.

3,568,876
COVER-CARRIER FOR MAIL TRAYS AND THE LIKE

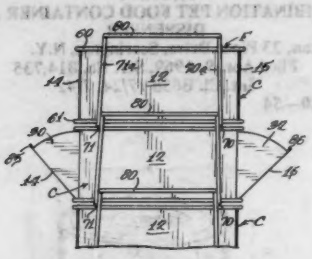
Gene D. Danenberger, R.R. 2, Box 83AA, Chandlerville, and Glenn G. Vancil, Rte. 1,, Pawnee, Ill.

Filed Dec. 12, 1968, Ser. No. 783,354
Int. Cl. B65d *45/00*
U.S. Cl. 220—55 7 Claims



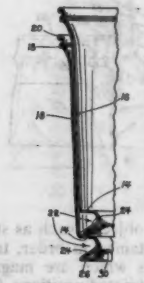
A cover-carrier for objects, such as stacked trays of mail which are to be maintained in order, transported and protected, features hooks which are magnetically latched in either suspended or retracted positions. On opposite walls of the inverted boxlike cover-carrier, hanging on horizontal pins, are the elongated loop ends of the hooks which when turned downward pass through apertures. Magnets between the pins and the apertures holds the hooks inwardly against the wall of the cover-carrier, to engage beneath the lip of the lowermost object. When the hooks are rotated outwardly, their loop ends slip downward in a retracted position, where they are held by the same magnets.

3,568,877
TOTE-BOX OR THE LIKE
Conrad D. Mastrud, Jr., 734 N. Leavitt, Chicago, Ill.
Filed July 18, 1968, Ser. No. 745,785
Int. Cl. B65d 25/16, 5/56
U.S. Cl. 220—65 4 Claims



A tote-box having a container with a bottom and upstanding end and sidewalls with a structural framework for strengthening the container and rendering the tote-box stackable with side entry to the container wherein one of the sidewalls of the container is outwardly pivotal to provide side entry access and said structural framework including members encircling the container and coacting with the container for strengthening thereof and rendering the container stackable with other similar units along with structure to lock the container to the framework and to limit the outward pivotal movement of the container sidewall, the container being formable from a one-piece blank of cardboard or the like and wherein color coding can be provided for a variety of tote-boxes merely by preselection of the precolored stock used in forming the containers.

3,568,878
CONTAINER
Stephen Fotos, Englewood Cliffs, N.J., assignor to Multi Molds, International, Inc., New York, N.Y.
Continuation of application Ser. No. 346,476, Feb. 21, 1964, now abandoned. This application July 6, 1967, Ser. No. 660,540
Int. Cl. B65d 21/02, 1/26
U.S. Cl. 220—97 6 Claims

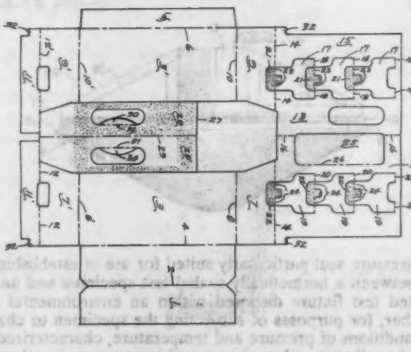


A one-piece nestable thin wall container made from plastic sheet material including a novel stacking configuration which permits axial yielding movement of a nested stack of similarly configured containers when a weight is impressed thereon.

3,568,879
PLASTIC STACKING AND TRANSPORT CASE
Theodor Box, 1108 Ailene Road, Brielle, N.J.
Filed Mar. 4, 1969, Ser. No. 804,145
Int. Cl. B65d 21/02, 1/22
U.S. Cl. 220—97 4 Claims

An integrally molded oblong rectangular plastic transport case having a length-to-width ratio greater than 1 and less than 1.5 has its bottom wall formed with two rows of three spaced and aligned framelike outward extensions each, said rows being symmetrical to the lengthwise center line of said wall, to provide a single lengthwise channel intersected by two crosswise channels of a width in excess of twice the width of the upper edges of the side and end walls of the case. The center lines of each of the crosswise channels are spaced from the short sides of said bottom wall such as to enable crosswise stacking and mutual interlock of tiers each including a plurality of cases. The spaces within the extensions near the corners of said bottom wall include gridlike structures flush with their outer surfaces, to provide discrete bearing surfaces for the wheels of a gravity conveyor used for loading and unloading of the cases.

3,568,880
BASKET STYLE CARRIERS
Glen Ray Harrelson, Monroe, La., assignor to Olinkraft, Inc.
Filed Aug. 19, 1969, Ser. No. 851,414
Int. Cl. B65d 5/48, 5/02
U.S. Cl. 220—113 3 Claims

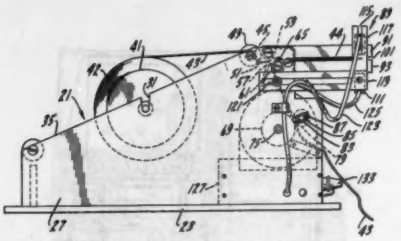


An improved full or partial protection, multiarticle carrier requiring a reduced number of steps for erection and having increased handle strength. The lateral partition panels which separate the articles within a longitudinal row are cut from a single pair of riser panels.

3,568,881
LABEL DISPENSING DEVICE

Francis M. Croney, Euless, Tex., assignor to Devmar, Inc., Arlington, Tex.

Filed Aug. 5, 1968, Ser. No. 750,340
Int. Cl. G07f 11/00
U.S. Cl. 221—13 7 Claims

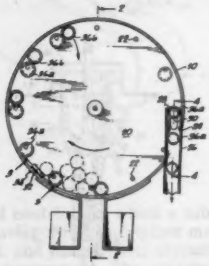


A label dispensing machine for separating pressure sensitive adhesive coated labels from a continuous backing tape and delivering the labels to a removal station upon demand. The labels are separated from the continuous backing tape by means which pulls the backing tape away from the labels as the labels are fed to a support roller contiguous to the removal station. The backing tape and its attached labels are fed through the dispensing machine by a driving means which engages the backing tape. The driving means is actuated by an electric eye means which is associated with the label removal station. The electronic circuit between the electric eye means and the drive motor is designed so as not to be adversely affected by changes in voltage.

3,568,882
HOPPER-TYPE APPARATUS FOR FEEDING ORIENTED SHALLOW FLANGED ARTICLES

Samuel S. Aidlin, 214 Beaumont St., New York, and Stephen H. Aidlin, 3855 Shore Parkway, Brooklyn, N.Y. 11235

Filed Apr. 15, 1969, Ser. No. 816,216
Int. Cl. B23q 7/12
U.S. Cl. 221—164 5 Claims



Hopper-type apparatus for feeding oriented shallow, flanged articles, such as jar caps, which includes a hopper having a rotating hopper bottom provided with a circular row of pins set into its surface in spaced relation to the wall of the hopper, and a ramp mounted in the lower part of the hopper, with its slope facing the direction of rotation of the bottom, and its lower end contacting the same, to thereby raise articles from the hopper bottom moved by the rotation thereof and drop them over the pins passing the ramp.

3,568,883
CARTON DISPENSER FOR WRAPPED ARTICLES

Gordon S. Reynolds, Salt Lake City, Utah, assignor to Le Voy's Inc., Salt Lake City, Utah

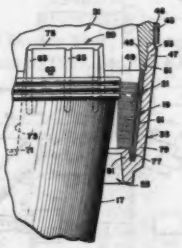
Filed Mar. 21, 1969, Ser. No. 809,219
Int. Cl. A47f 1/08; B65d 83/00, 5/16
U.S. Cl. 221—305 4 Claims

A carton dispenser for wrapped articles in which articles may be packaged for delivery, and later the carton dispenser hung on a wall and articles may be withdrawn one at a time for use through a bottom opening in the carton dispenser provided by the removal of a tab initially folded to close the opening until the dispenser is put to use.

3,568,884
DISPENSER

Joseph Petricek, Sr., LaMirada, Calif., assignor to Solo Cup Company, Chicago, Ill.

Filed June 11, 1969, Ser. No. 832,171
Int. Cl. A47f 1/04
U.S. Cl. 221—310 6 Claims



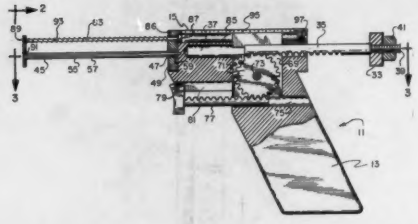
A dispenser is formed with an elongated housing the interior of which is hollow for receiving a stack of nested cups. Each bottom cup is removed one at a time by pulling it past a retaining means including flexible bristles extending radially inward in the housing to engage the cups adjacent the rims thereof. A guiding means in the housing limits tilting or angular movement of the cups from a position substantially in alignment with a longitudinal axis for the dispenser. The guide means may be in the form of angularly spaced and longitudinally extending guiding ribs which are arranged to define a guiding surface having an internal diameter slightly greater than the exterior diameter of the cup rim.

3,568,885

THICKNESS MEASURING AND INJECTION DEVICE

Robert L. Spencer, Huntsville, Ala. Administrationthe United States of America as represented by the administrator of the National Aeronautics and Space Administration

Filed July 30, 1969, Ser. No. 845,990
Int. Cl. B67d 5/06
U.S. Cl. 222—23 6 Claims



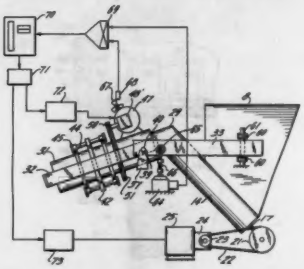
A device for measuring the thickness of a surface material, such as spray-on foam insulation applied on a backing, and injecting a repair substance into the material. An injection gun comprises a needle that penetrates the thickness of the material being measured while a slidable thickness-indicating rod is pushed inwardly of the gun by an amount equal to the penetration of the needle. Two separate syringe cylinders are provided for containing fluid components that form foam insulation material when mixed and as the needle is withdrawn from the foam material these components are injected through separate needle passages into the cavity formed by the needle penetration.

3,568,886

LOW CAPACITY WEIGHER AND FEEDER

John L. Christmann, Passaic, N.J., assignor to Merrick Scale Mfg. Company, Passaic, N.J.

Filed Mar. 18, 1969, Ser. No. 808,265
Int. Cl. B67d 5/08
U.S. Cl. 222—55 14 Claims



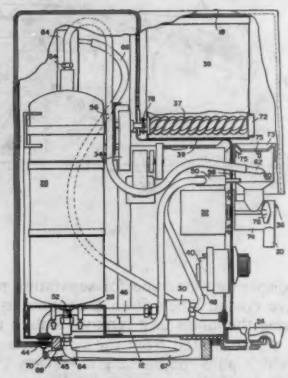
A low capacity weigher and feeder for handling capacities from 100 pounds per hour to a fraction of a pound per hour comprising a bin discharging material into a screw prefeeder or conveyor inclining to and transferring the material into a rotating drum declining from the transfer end of the screw conveyor and supported by a beam fulcrumed at the point of transfer between the screw conveyor and the drum and connected to a low capacity strain gauge for controlling the rate of feed and integrating the weight of said material. Both the screw conveyor and the drum are rotated by separate variable speed motors which are regulated by the strain gauge and a pulser wheel with its pickup coil.

3,568,887

HOT BEVERAGE DISPENSER

William H. Jacobs, Chestnut Hill, and Robert L. Norton, Norfolk, Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.

Filed Nov. 13, 1967, Ser. No. 682,343
Int. Cl. B67d 5/08, 5/56
U.S. Cl. 222—70 6 Claims



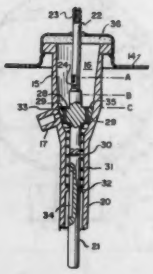
A hot chocolate dispenser having a water heater and a powder flavor pot and an adjustable timing means for dispensing different size drinks by dispensing variable quantities of water and powder.

3,568,888

SELECTIVE AEROSOL VALVE SYSTEM

Andrew A. Baldoni, Crystal Lake; Gerard W. Meister, Barrington, and Larry D. Hufsey, Elgin, Ill., assignors to Simoniz Company

Filed July 23, 1969, Ser. No. 844,079
Int. Cl. B65d 35/22
U.S. Cl. 222—94 4 Claims

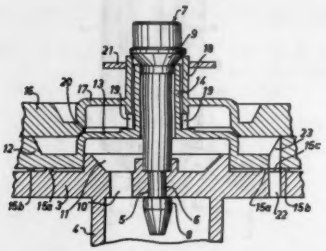


An aerosol dispensing valve system for dispensing selectively a first fluid only, a second fluid only or a mixture of the fluids depending upon the position of a movable valve stem in which the fluids are retained in their own separate containers and are maintained distinct except when the mixture is dispensed.

3,568,889
VALVE FOR DISPENSING A PLURALITY OF FLUIDS

Bruno Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed Nov. 21, 1968, Ser. No. 777,599
Claims priority, application France, May 6, 1968, PU150,611
Int. Cl. B67d 5/52
U.S. Cl. 222—136 13 Claims

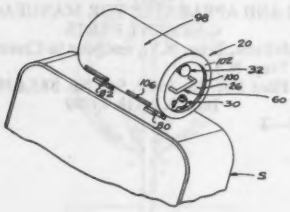


Valve for simultaneously distributing fluids from a plurality of pressurized tanks comprising a central stem encircled by a plurality of radially spaced concentric cylinders, the upper ends of which seal against a seat on the upper end of the stem, while each lower cylinder end is attached to one of a plurality of superposed transverse plates, with the interior of each cylinder in communication with one of said tanks.

3,568,890
HEADREST-LIQUID CONTAINER

Thomas S. Leachman, 3608 Volcanic Ave., El Paso, Tex.

Filed Sept. 17, 1969, Ser. No. 858,755
Int. Cl. B67d 5/06
U.S. Cl. 222—183 7 Claims



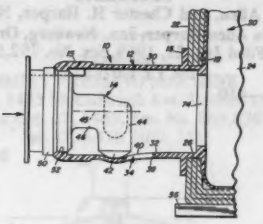
A headrest-liquid container in which a substantially cylindrical container, having filling and spigot means, is encased in a protective pad, and has brackets extending through the pad for seat back engagement. The container may be supplied with pivotal legs for use apart from the headrest function.

3,568,891
SPOUT FOR CONTAINER

Frank T. Parish, 313 Brooklawn, Frederick, Md.

Filed Sept. 6, 1968, Ser. No. 757,903
Int. Cl. B65d 37/00
U.S. Cl. 222—213 8 Claims

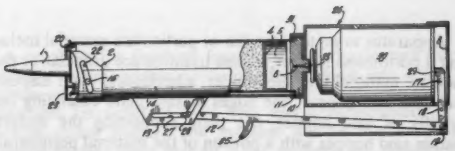
A spout or spigot for use with a receptacle containing liquids wherein a valve member is prestressed against a dispensing opening to thereby limit liquid flow except by relieving the prestressed condition by squeezing of a tubular member.



3,568,892
AEROSOL CAULKING ASSEMBLY

Keith E. Burk, Kalamazoo, Mich., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Mar. 13, 1969, Ser. No. 807,045
Int. Cl. B67d 5/46
U.S. Cl. 222—327 16 Claims

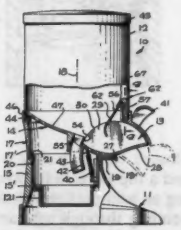


A caulking assembly wherein the plunger within the caulking cartridge is moved forward utilizing a gas secured from an aerosol container thereby permitting uniform and even application of the caulking compound only at the desired areas. The aerosol caulking gun mechanism comprises in combination a metal cartridge holding assembly, a power source holding assembly and an actuator assembly.

3,568,893
DISPENSER

Henry Becker, 4163 Beverly Blvd., Los Angeles, Calif.

Filed June 9, 1969, Ser. No. 831,606
Int. Cl. G01f 11/10
U.S. Cl. 222—362 15 Claims



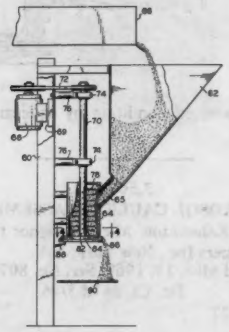
A dispenser for delivering measured quantities of nuts or the like from a supply receptacle, and including a unit forming a bottom wall of the supply receptacle and constructed to retain in position a pivotally movable measuring chamber and a spring element which coacts with the measuring chamber to close off the flow of nuts or other items thereinto upon a pivotal dispensing operation.

3,568,894

MEANS TO METER GRANULAR OR PARTICULATE MATERIAL

Kenneth M. Allen, and Chester H. Harper, Newberg, Oreg., assignors to Allen-Harper, Inc., Newberg, Oreg.

Filed Jan. 21, 1969, Ser. No. 792,510
Int. Cl. G01f 11/00
U.S. Cl. 222—410 10 Claims



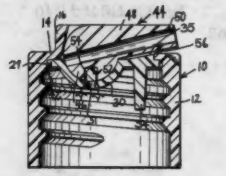
Apparatus to meter granular or particulate material including a bottomless hopper, means to introduce granular or particulate material into the hopper, a horizontal plate disposed beneath said hopper, the edges of said plate extending outwardly of said hopper, the plate supporting the material within said hopper with a portion of the material peripherally exterior of the hopper and resting on the plate at its angle of repose, and means to oscillate the plate in its plane to distribute the material over the edges thereof.

3,568,895

DISPENSING CLOSURE CAP FOR A CONTAINER

Alvin J. Porter, Minneapolis, Minn., assignor to Product Design & Engineering Inc., Minneapolis, Minn.

Filed July 30, 1968, Ser. No. 748,850
Int. Cl. B67d 5/12
U.S. Cl. 222—534 3 Claims



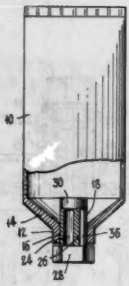
A dispensing closure cap including a base portion having an annular wall and a top portion formed with a slot together with a spout having an arm portion terminating in a base with a passageway extending through said arm and said base. An insert for said base having an outlet hole formed therethrough together with complementary socket means formed within said top portion and said insert in which the base of said spout is mounted for pivotal movement together with means for securing the insert in the base portion with the arm of the spout extending through said slot, the pivotal movement of the spout causing said passageway of said spout to register with said outlet hole of said insert or to not register whereby the outlet hole is sealed off.

3,568,896

CAPTIVE STOPPER FOR TOOTHPASTE TUBES AND LIKE CONTAINERS

Arthur M. Harris, Fairfield, Conn.

Filed Sept. 5, 1969, Ser. No. 855,552
Int. Cl. B65d 51/06
U.S. Cl. 222—557 14 Claims



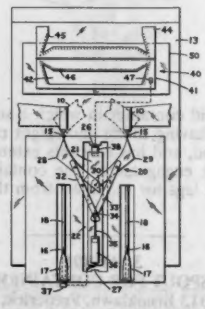
A closure for dispensing-type containers such as collapsible tubes, comprising a tubular orifice for location at the discharge end of the container, said orifice having annular transverse end surfaces at its outer and inner ends. Two stopper members are engageable respectively with the end surfaces of the orifice, said members being connected together by a resilient hinge pin which is eccentrically disposed in the orifice and which mounts the stopper members for simultaneous pivotal movement between closing positions wherein they shut off the orifice bore and dispensing positions wherein they open said bore. At least one of the stopper members has a raised land portion which is adapted to occupy one end of the orifice bore. The hinge pin flexes to permit said land portion to surmount and traverse the one end surface of the orifice during pivotal movement of the stopper members between the open and closed positions. The land portion provides a detent action, apprising the user of the fully closed positioning of the stopper members.

3,568,897

METHOD AND APPARATUS FOR MANUFACTURING GARMENT PARTS

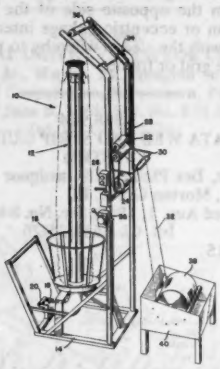
Richard J. McFalls, Troy, N.Y., assignor to Cluett, Peabody & Co., Inc., Troy, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,030
Int. Cl. A41h 43/00
U.S. Cl. 223—2 6 Claims



Method and apparatus for turning, shaping and topstitching a multiple-ply garment part including a collapsible form which shapes and delivers the turned garment part to a clamping jig for subsequent topstitching.

3,568,898
EVERTING APPARATUS AND METHOD
Roy J. Griffin, Jr., 296 Araminta Drive, Winston-Salem, N.C.
Filed Sept. 5, 1969, Ser. No. 862,611
Int. Cl. A41h *43/00*
U.S. Cl. 223—43 **15 Claims**

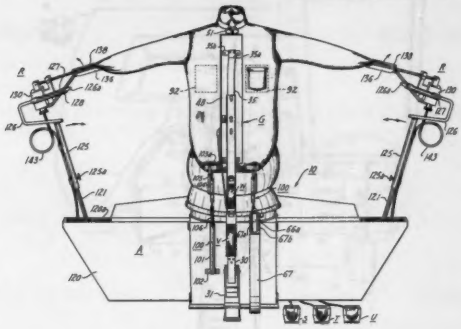


Apparatus and method for everting a supply of a tubular fabric utilizing an elongated, hollow, tubular member about the exterior of which can be collected a supply of tubular fabric by the utilization of a selectively directed air stream. The collected fabric is then directed into and through the interior of the tubular member by a second selectively directed air stream so that the inside of the fabric is turned to the outside and the fabric emerges from the tubular member in an everted condition. Various drive and guide means are incorporated to move the fabric to the tubular member and receive the fabric from the tubular member for conveyance to a remote location.

3,568,899
WIG SUPPORT
Albert Rosenberg, 6700 Harbison Ave. Apt. 11A, Philadelphia, Pa.
Filed Feb. 2, 1970, Ser. No. 7,608
Int. Cl. D06c *15/00*
U.S. Cl. 223—66 **6 Claims**

A collapsible wig support is formed by means of a plurality of bendable ribs which are assembled in a generally circular arrangement with one set of ends of the ribs movable with respect to the other to bend the ribs to form a generally spherical shape suitable for mounting a wig. The ribs are latched in the bent condition. The ribs themselves may be suitable for carrying fasteners for securing the wig thereto directly, or a cover may be placed over the framework of ribbing so that the wig can be attached or pinned to the cover itself. The mounting of the rib framework is supported by a suitable type of stand or clamping structure so that it can be erected and retained on a table or the like. When not in use, the framework may be unlatched so that the ribs unbend to a collapsed condition, whereby the entire unit takes up very little space and is suitable for storage and for portability.

3,568,900
SHIRT PRESSING MACHINE
August F. Paris, 1415 McCullough Ave, Brockway, Pa.
Filed Oct. 27, 1969, Ser. No. 869,830
Int. Cl. A41h *5/00, 5/02*
U.S. Cl. 223—70 **23 Claims**



A machine for finishing laundered and drycleaned shirts employs an expandable permeable fabric form into which a mixture of hot air and dry steam are introduced. The form is adjustable for different shirt sizes and is surmounted by a partible collar shaper. The machine has an internal front counter presser plate and an outer cooperating, separately-heated, front pressure plate, suitable bottom edge clips, a front edge top and bottom clip assembly, and a back pressure plate that is termed a shirt tail finisher. The fabric form has a backwardly-positioned lower bustlelike secondary or auxiliary form that cooperates with the back pressure plate to give an outwardly-diverging expanding action to a shirt tail being finished. The form has portions of increased permeability opposite seamed or thickened portions of the shirt and makes use of metal plate means for finishing pockets. The machine operates in a substantially automatic cycle and is provided with cuff-gripping means that accommodates to any suitable length of sleeve and to short sleeves.

3,568,901
SLIDE FASTENER OPERATING MECHANISM
Lewis F. McNitt, 23219 Lake Road, Bay Village, Ohio
Filed Nov. 22, 1968, Ser. No. 778,267
Int. Cl. A47j *51/06*
U.S. Cl. 223—111 **3 Claims**

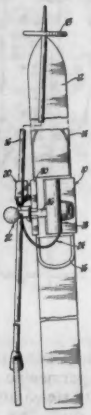
A slide fastener operating mechanism adapted for door or wall mounting is secured to an endless cord that is suspended

and running between spaced, resiliently supported end pulleys, themselves positioned in easily removable over-the-door or wall securable brackets.

3,568,902
DEVICE FOR CARRYING AND SECURING SKI EQUIPMENT

Samuel M. Highberger, 5543 Westwood Lane, Birmingham, Mich.

Filed July 11, 1968, Ser. No. 744,197
Int. Cl. A45f *3/00*
U.S. Cl. 224—45 **23 Claims**

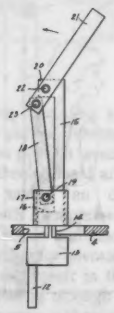


A device for use in carrying and securing ski equipment including a U-shaped member and a hinged member that is lockable with respect to the U-shaped member after the U-shaped member and hinged member are positioned around a pair of skis that are disposed in back-to-back relationship. The device also includes a pivotable member for locking ski poles into a fixed position, the pivotable member being positioned so that a single locking plunger can tie together the U-shaped member, the hinged member, and the pivotable member thereby adapting the device to be carried or alternatively secured to a fixed object.

3,568,903
STRIPPING MEMBER ASSEMBLY

Pierre Lang, Ecublens, Switzerland, assignor to J. Bobst & Sons, Inc., Prilly, Switzerland

Filed May 16, 1969, Ser. No. 825,252
Claims priority, application Switzerland, May 20, 1968, Apr. 16, 1969, 7781/68;5721/69
Int. Cl. B26f *3/00*
U.S. Cl. 225—93 **7 Claims**

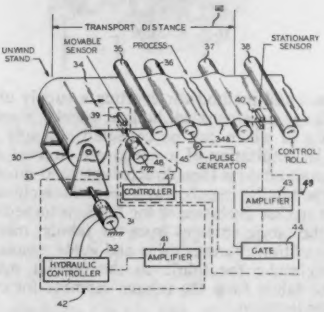


A device for rapidly releasably connecting a waste stripping pin or reject ejector to a grid or supporting frame. The stripping pin is connected to or forms a part of a leg which in turn is guided for rectilinear movement within a sleeve. The parts are arranged so that the stripping pin and/or its associated pin block and the sleeve sandwich the grid or frame between them with the pin extending from one side of the frame or grid and the leg extending through and protruding from the opposite side of the frame or grid. A simple lever arm or eccentric linkage interconnects the free end of the leg with the sleeve whereby to positively lock the assembly on the grid or frame.

3,568,904
SAMPLE DATA WEB AND STRIP GUIDE CONTROL SYSTEM

Robert S. Kurz, Des Plaines, Ill., assignor to GPE Controls, Incorporated, Morton Grove, Ill.

Filed Aug. 1, 1969, Ser. No. 846,856
Int. Cl. B65h *25/26*
U.S. Cl. 226—15 **11 Claims**

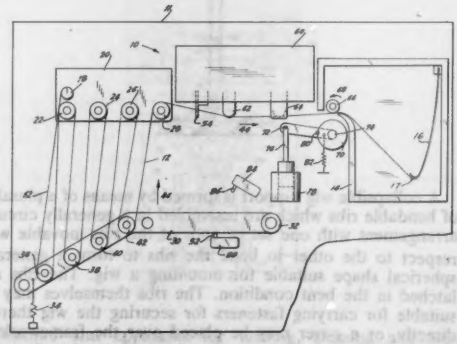


Control system for guiding a traveling web or strip to facilitate the performance of work on the web or strip to provide strip positioning at a location remote from the strip actuator by employing a movable sensor adjacent the actuator modulating the actuator in response to a set point, and a stationary sensor at the control point generating a time sampled signal to the movable sensor for changing the set point in response to the position of the strip at the control point.

3,568,905
TAPE FEEDING RETRACE MECHANISM

Hans F. Napfel, Huntington; Lee H. Schank, Melville, and Norman Buten, Douglaston, N.Y., assignors to Fairchild Camera and Instrument Corporation, Syosset, L.I., N.Y.

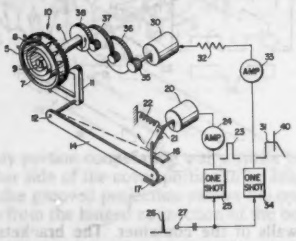
Filed May 9, 1969, Ser. No. 823,266
Int. Cl. G11b *15/29*
U.S. Cl. 226—50 **6 Claims**



A mechanism for drive and rapid retrace of a length of recording tape to be used in a linear manner in a teaching ap-

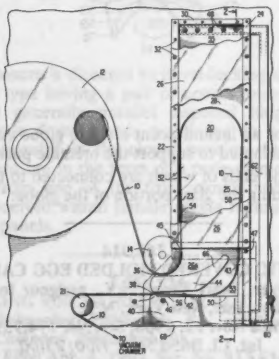
paratus or the like. The tape is carried by a retrace arm and driven in one direction in opposition to a spring force by a driven capstan into a storage compartment thereafter to be rapidly withdrawn from the compartment when not subjected to driving forces by the spring force.

3,568,906
INCREMENTAL DRIVE SYSTEM FOR CODED TAPE
John Paul Jones, Jr., Wayne, Pa., assignor to Navcor, Inc., a Division of KDI Corporation, Norristown, Pa.
Filed June 6, 1969, Ser. No. 831,191
Int. Cl. G03b *1/24*
U.S. Cl. 226—76 7 Claims



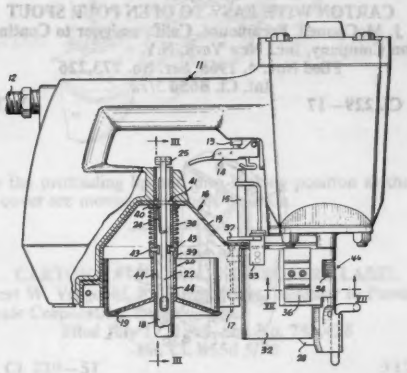
A system is described for incrementally advancing coded tape in response to an electronic trigger signal by means of a sprocket drum driven by a DC motor of limited torque during a time period at which a current drive pulse of predetermined duration occurs. An energy storage spring is coupled between a motor driven shaft and the drum to absorb energy from the motor until a stall condition is reached, and an incremental ratchet mechanism confines the rotation of the drum to a predetermined angle for each motor driving pulse, thereby efficiently using a small amount of energy only during the advancing period. A second motor reciprocates the ratcheting mechanism during the period the drum motor is operated.

3,568,907
REDUCTION OF TAPE STICTION
James Power Watson, Jupiter, Fla., assignor to RCA Corporation
Filed May 6, 1969, Ser. No. 822,173
Int. Cl. G11b *23/12*
U.S. Cl. 226—97 9 Claims



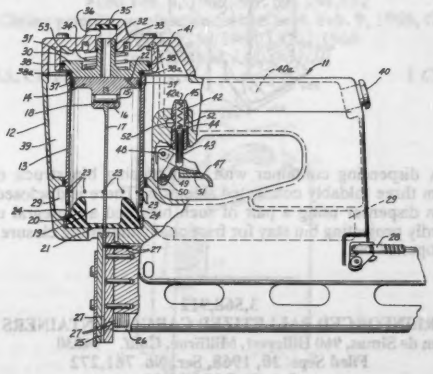
Tape stiction between a tape loop and the walls of a vacuum chamber is reduced by creating an air film, at a pressure greater than that within the tape loop, between the tape and walls.

3,568,908
MAGAZINE AND SKIP-OFF PREVENTING MECHANISM FOR FLUID ACTUATED FASTENER DRIVING MACHINE
I. Walton Bader, Brooklyn, N.Y., assignor to Swingline Inc., Long Island City, N.Y.
Filed Oct. 10, 1968, Ser. No. 775,989
Int. Cl. B25c *1/04*
U.S. Cl. 227—127 10 Claims



Improvements to a fluid-actuated fastener driving machine are shown. These include a magazine structure having a container for holding a plurality of fasteners, a stem within the container and a movable guide carried by the stem. A cover overlies the container and a cover ejecting member is connected to the stem. The guide is selectively connectable to the cover. Feed structure is operatively connected to the magazine and includes a track, a door overlying the track, a reciprocatingly movable first feed pawl within the track and a pair of auxiliary feed pawls springably connected to the door, spaced from the first feed pawl and at opposite sides thereof. A fastener ejecting channel is operatively connected with the track and has a holding member disposed therewithin. The member is movable out of the channel by impingement of a driven fastener thereupon.

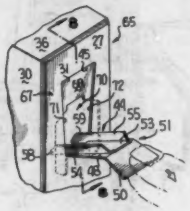
3,568,909
FASTENER DRIVING MACHINE
Garry R. Perkins, Rolling Meadows, Ill., assignor to Spotnails, Inc., Long Island City, N.Y.
Filed July 23, 1969, Ser. No. 843,942
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 12 Claims



A fastener driving machine is adapted shown having a housing with a piston movable therewithin. An air pressure system is to move the piston in a driving stroke and a bumper

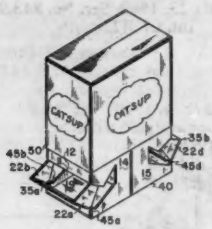
is abuttable with the piston at the end of the driving stroke. An air return chamber is connected to the housing by means of a plurality of openings within the housing and these openings are normally below the piston at the time that the piston commences its return stroke. These openings will be above the piston if the bumper is damaged and, therefore, will not permit the machine to operate in this condition.

3,568,910
CARTON WITH EASY TO OPEN POUR SPOUT
Don J. McConnell, Paramount, Calif., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 4, 1968, Ser. No. 773,226
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 **13 Claims**



This disclosure relates to a carton including pour spout provisions defined by a first exterior pour spout defining panel and a second aligned interior pour spout defining panel. The first panel includes an inwardly depressible starting portion and an outwardly extensible gripping portion and the second panel includes a central portion affixed to the exterior first panel and pour spout sidewall forming portions hingedly connected with the central portion. Means located inwardly with respect to the exterior first panel blocks inward movement of the gripping portion to provide outward extension thereof upon depression of the starting portion.

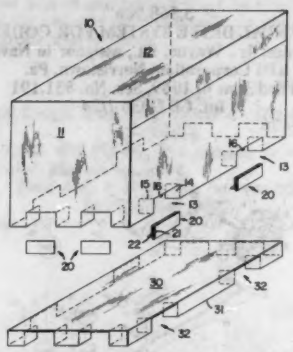
3,568,911
DISPENSING CONTAINER
Donald R. Bebout, Stone Mountain, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jan. 22, 1969, Ser. No. 792,956
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 **10 Claims**



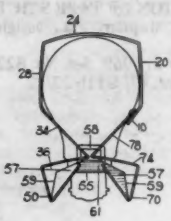
A dispensing container with a dispensing bin struck out from three foldably connected sidewalls. There is disclosed a twin dispenser using a pair of such bins and an integral upwardly projecting bin stay for frictionally inhibiting closure of an opened bin.

3,568,912
REINFORCED PALLETIZED CARGO CONTAINERS
John de Simas, 960 Hillcrest, Millbrae, Calif. 94030
Filed Sept. 20, 1968, Ser. No. 761,272
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 **5 Claims**

Reinforced cardboard palletized cargo containers having a container portion with cutouts at the bottom of the sidewalls for receiving the tines of a forklift truck. The cutouts include vertical flaps extending into the container from the sides of the cutouts for positioning on the flaps a flat base on which packaged goods are placed. An elongate U-shaped bracket extends over the upper edge of the cutouts frictionally engaging the sidewalls of the container. The brackets provide a durable bearing surface for the tines of a forklift truck and include a flat edge extending into the container above the flat base on which packaged goods rest for positioning the base between the flat edge of the bracket and the cutout flaps of the container walls.



3,568,913
CONTAINERS FOR ELECTRICAL GLOBES OR SIMILAR OBJECTS
Reginald Friedenthal, 430, Amcor House, 88, Marshall Street, Johannesburg, South Africa
Filed Jan. 27, 1969, Ser. No. 794,004
Claims priority, application South Africa, Feb. 5, 1968, 68/0747
Int. Cl. B65d *5/02, 85/30*
U.S. Cl. 229—40 **8 Claims**

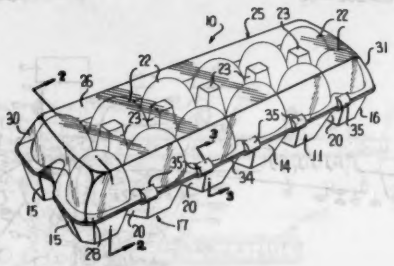


A carton for an incandescent electric globe consisting of a base portion adapted to support the metallic part of the globe and a loop, the ends of which are connected to the base portion, surrounding the glass portion of the globe.

3,568,914
PLASTIC COVERED MOLDED EGG CARTON
Heinz Ahlmeyer, Pearl River, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Nov. 12, 1968, Ser. No. 774,959
Int. Cl. B65d *5/66, 1/00, 25/00*
U.S. Cl. 229—44 **4 Claims**

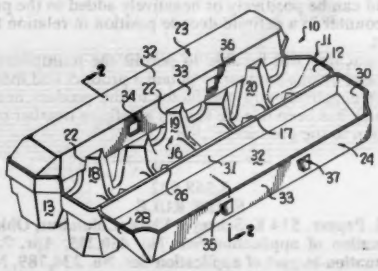
An egg carton having a pocketed molded paper pulp lower carton body portion and a transparent plastic or synthetic resinous material cover portion is disclosed herein. The lower body portion and cover portion are hingedly connected by the provision of an elongate terminal rib or bead integrally molded on the extremity of one side of the lower body portion and a plurality of channeled projections integrally

molded on one side of the cover portion and partially encompassing the elongate rib or bead for pivotal movement thereon. The body portion and cover portion are latched together by an elongate integrally molded grooved projection



on the body portion cooperating with a rib or bead terminating a further side of the cover portion to be snapped into the groove of the grooved projection and on the opposite side of the carton from the hinged connection of the body and cover portions.

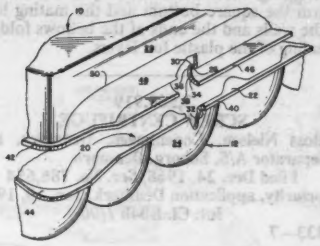
3,568,915
LOCKING MEANS FOR CARTON COVERS
Fred C. Newman, La Grange Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 5, 1968, Ser. No. 702,847
Int. Cl. B65d *45/00*
U.S. Cl. 229—45 **9 Claims**



This disclosure is directed to novel-locking means for cartons of the type having a pair of covers joined to a carton body along generally parallel disposed hinge lines. The covers include front panels positioned in generally contiguous relationship in the closed position thereof, and the locking means are in the form of a male element protruding outwardly from one of the front panels and being interlockingly received within female recess means on the other of the front panels.

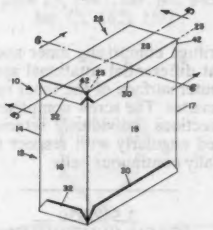
3,568,916
LOCKING MECHANISMS FOR EGG CARTONS
George R. Scheuring, Pittsburgh, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.
Filed Apr. 4, 1969, Ser. No. 813,616
Int. Cl. B65d *45/00*
U.S. Cl. 229—45 **9 Claims**

Locking mechanisms for egg cartons having an integrally hinged tray and cover. The locking mechanism includes a locking flange that extends inwardly from the bottom of the cover's front wall and engages the underside of a protruding lip on the carton's tray when the carton is closed, and a depending flange that extends downwardly and outwardly from the inner edge of the locking flange to flex the locking flange



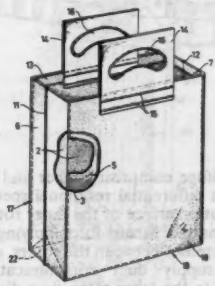
over the protruding lip and into locking position as the tray and cover are moved into closed position.

3,568,917
CARTON HAVING AN END CLOSURE LABEL
Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.
Filed July 17, 1968, Ser. No. 745,428
Int. Cl. B65d *5/70*
U.S. Cl. 229—51 **3 Claims**



A carton having a separate end closure label or covering adhesively secured to the ends thereof primarily for the purpose of covering and closing any pinhole openings at corners or other areas of conventional carton end closures whereby to prevent leakage of finely divided materials and to prevent entrance of air or moisture.

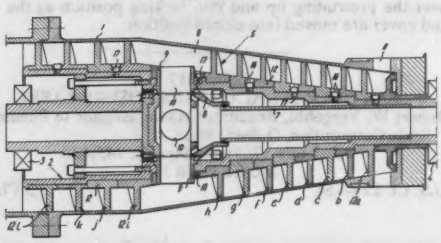
3,568,918
SHOPPING BAG HAVING REINFORCED WALLS
Karl Olof Blomqvist, Hackstavagen 7, S-184 00 Akersberga, Sweden
Filed Feb. 4, 1969, Ser. No. 796,492
Claims priority, application Switzerland, Feb. 9, 1968, Oct. 11, 1968, 1735/1968;13772/1968
Int. Cl. B65d *33/02, 33/10*
U.S. Cl. 229—55 **1 Claim**



A collapsible shopping bag having four sides and a square bottom when opened out from a flattened state. It is formed

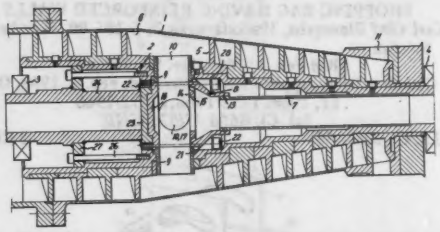
by two layers of flexible and heat-sealing plastics foil with an intermediate stiffening sheet of Kraft paper inserted between such layers extending continuously across the bottom and along two opposite bag sides. The bag in flattened state has two side-forming walls connected by a transverse bellows fold to form the square bottom and the mating longitudinal edges of the walls and the ends of the bellows fold are closed by heat sealing of the plastic foil layers.

3,568,919
SCREW CENTRIFUGE
Torben Boss Nielsen, Copenhagen, Denmark, assignor to Titan Separator A/S, Soborg, Denmark
Filed Dec. 24, 1968, Ser. No. 786,654
Claims priority, application Denmark, Jan. 10, 1968, 73/68
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **5 Claims**



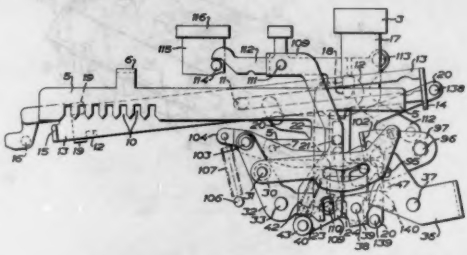
A screw centrifuge comprising inner and outer centrifuge rotors rotating at differential rotational speeds with a screw secured to the outer surface of the inner rotor for conveying separated solid matter. The screw comprises a plurality of axially adjoining sections individually secured to the internal rotor and located angularly with respect to one another to form a substantially continuous helix.

3,568,920
SCREW CENTRIFUGE
Torben Boss Nielsen, Copenhagen, Denmark, assignor to Titan Separator A/S, Soborg, Denmark
Filed Dec. 24, 1968, Ser. No. 786,662
Claims priority, application Denmark, Jan. 10, 1968, 74/68
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **4 Claims**



A screw centrifuge comprising inner and outer centrifuge rotors rotating at differential rotational speeds with a screw secured to the outer surface of the inner rotor for conveying separated solid matter. Means for supplying raw material to the separating chamber between the rotors, comprises an axially extending supply duct communicating with radial bushings secured in the inner rotor via a dismountable insert having corresponding, radially orientated discharge apertures.

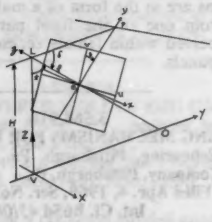
3,568,921
POWER-DRIVEN CALCULATING MACHINE
John Lydfors, Malmo, Sweden, assignor to Aktiebolaget Addo, Malmo, Sweden
Filed May 22, 1969, Ser. No. 826,862
Claims priority, application Sweden, May 28, 1968, 7,102/68
Int. Cl. G06c *15/12, 13/00, 23/00*
U.S. Cl. 235—60 **3 Claims**



A power-driven calculating machine with a shiftable multiplier register containing a multiplier, a counter and a setting pin carriage with a multiplicand, which includes a presetting means connectable with the setting pin carriage by actuation of a preset operating means after insertion of the multiplicand in the setting pin carriage but before operation of the multiplication means, said presetting means being capable upon adjustment of the setting pin carriage after the multiplying operation, of stopping the carriage in the decade position occupied after insertion of the multiplicand but before the multiplying operation, and operable by preselection operating means for shifting said setting pin carriage so that in the shifting direction after insertion of the product in the counter but before a definite number of decade positions are produced by adding and subtracting means so that the multiplicand can be positively or negatively added to the product in the counter in a definite decade position in relation to said product.

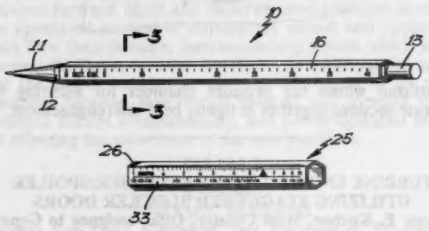
The machine will be able to permit the multiplication of two factors by one another to obtain a product and then positively or negatively add one factor to the product in a position which has been decade shifted a definite number of steps in relation to the product.

3,568,922
SLIDE RULE
Paul M. Pepper, 514 E. Schreyer Place, Columbus, Ohio
Continuation of application Ser. No. 450,235, Apr. 7, 1965, Continuation-in-part of application Ser. No. 234,789, Nov. 1, 1962, now abandoned , Continuation-in-part of application Ser. No. 253,229, Jan. 22, 1963, now abandoned. This application Sept. 18, 1967, Ser. No. 674,045
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 **12 Claims**



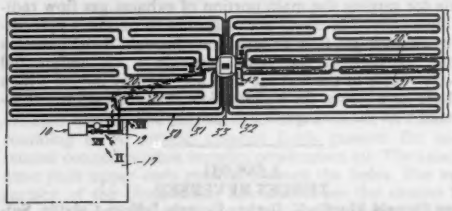
This invention relates generally to special purpose slide rule mathematical computers and particularly to a slide rule for computing the dimensions and positions of objects appearing on oblique aerial photographs.

3,568,923
AERONAUTICAL COMPUTER
Loyal H. Chapman, 1801 Flag Ave. South, Minneapolis, Minn.
Filed Mar. 28, 1969, Ser. No. 811,405
Int. Cl. G06g 1/02
U.S. Cl. 235—70 2 Claims



An aeronautical computer which combines a writing instrument with measuring scales used for measuring distances on aeronautical maps and log scales used for making various speed and fuel calculations.

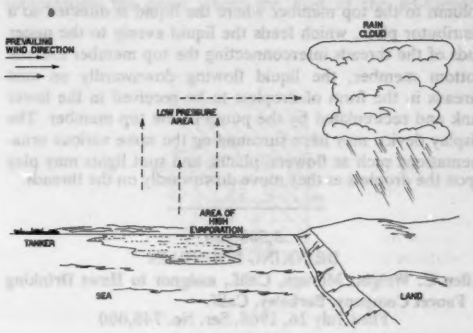
3,568,924
SNOW MELTING SYSTEM
Lawrence H. Chenault, 3840 West Thirteen Mile Road, Royal Oak, Mich.
Filed June 25, 1969, Ser. No. 836,264
Int. Cl. F24d 3/02
U.S. Cl. 237—1 11 Claims



A system for melting snow and ice from paved surfaces consisting of flexible plastic tubing imbedded in the pavement is supplied wit a circulatory liquid heating agent via supply mains beneath the pavement and which feed the tubing through risers located in pits positioned at expansion joints in the pavement. All joints and connections are located in the pits together with freely flexible inlet and outlet sections of the tubing, none of which bridges the expansion joint. The liquid heating agent circulates in closed loop circuits and the system is charged through filling means located in a return line close to the heating source and which includes a check valve located between two access openings.

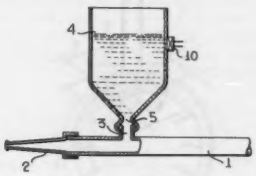
3,568,925
METHOD FOR PRODUCING INCREASED RAINFALL IN COASTAL REGIONS
Arthur C. Lietzer, 50 Rhine St, San Francisco, Calif.
Filed Aug. 8, 1968, Ser. No. 751,259
Int. Cl. A01g 15/00
U.S. Cl. 239—2 5 Claims

A method of producing increased rainfall in coastal regions by spreading a thin layer of solar radiation absorbing material over a large surface area of the sea adjacent the coastal region to increase heat absorption at the water surface and evaporation of water when the prevailing weather direction is



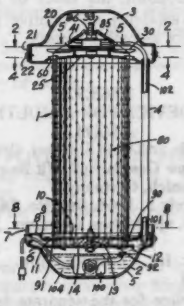
from the sea to the land, to thereby produce increased rainfall on the target land area.

3,568,926
WATER ADDITIVE
Romald E. Bowles, Silver Springs, Md., assignor to Bowles Engineering Corporation, Silver Springs, Md.
Filed June 13, 1967, Ser. No. 645,710
Int. Cl. A62c 1/02
U.S. Cl. 239—10 6 Claims



Material is added to a liquid jet to reduce jet dissipation by increasing the characteristic viscosity and surface tension of the liquid. Specifically, polyethylene oxide is added to water to increase the surface tension and apparent characteristic viscosity of water to decrease the dispersive effect of air on a water or liquid stream issued from a high velocity nozzle.

3,568,927
DISPLAY DEVICE
Robert H. Scurlock, 15138 Orizaba Ave., Paramount, Calif.
Filed July 29, 1968, Ser. No. 748,360
Int. Cl. B05b 17/08
U.S. Cl. 239—17 4 Claims



The display device has top and bottom members held separated by tubular columns or posts. Extending between

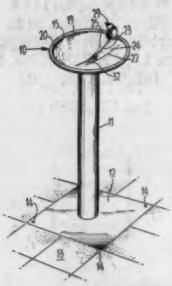
the top and bottom members are spaced-apart parallel vertical strings or threads and liquid is placed in a tank in the bottom member and pumped therefrom through a tubular column to the top member where the liquid is directed to a distributor plate, which feeds the liquid evenly to the upper ends of the threads interconnecting the top member and the bottom member, the liquid flowing downwardly on said threads in the form of droplets to be received in the lower tank and recirculated by the pump to the top member. The display device may have surrounding the same various ornamentations such as flowers, plants, and spot lights may play upon the droplets as they move downwardly on the threads.

3,568,928

DRINKING FOUNTAIN

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.

Filed July 26, 1968, Ser. No. 748,000
Int. Cl. E03b *9/20*
U.S. Cl. 239—28 **5 Claims**



A drinking fountain having a faucet from which water discharges upwardly and inwardly toward the center of a basin equipped with an antisplash ridge projecting from the concave bottom wall of the basin and terminating in a narrow crown having downwardly and outwardly curved slopes merging into the bottom wall of the basin. The ridge is aligned with the water discharge from the faucet to prevent splashing impingement of the water against the basin bottom wall, and the ridge is provided along the crown thereof with a port communicating with the basin waste outlet and serving normally as a ventilation opening therefor. The fountain also includes a hollow pedestal containing both the waste conduit and water supply conduit, the latter of which serves as a locating device to establish the relative orientation of the basin and pedestal for assembly thereof.

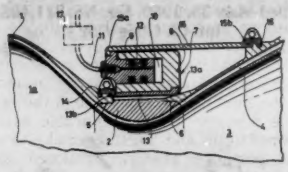
3,568,929

CONNECTING DEVICE FOR A MULTIPART THRUST NOZZLE

Karl Butter, Munich, and Karl Stoeckel, Ottobrunn, Germany, assignors to Bolkow Gesellschaft Mit Beschrankter Haftang, Ottobrunn by Munich, Germany

Filed July 3, 1968, Ser. No. 742,442
Claims priority, application Germany, July 13, 1967, B93463Ia/46g
Int. Cl. B64d *33/04*
U.S. Cl. 239—127.1 **12 Claims**

A connecting device for the separate sections of a thrust nozzle in a rocket construction is made up of members secured to different ones of the thrust nozzle sections and which combine to form a pressure chamber. A fluid pressure medium or spring pressure or a combination of the two may



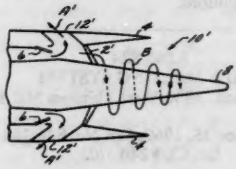
be utilized within the pressure chamber for securing the separate sections together in tightly held interengagement.

3,568,930

TURBINE ENGINE THRUST REVERSER/SPOILER UTILIZING STAGGERED BLOCKER DOORS

Andrew P. Kuchar, West Chester, Ohio, assignor to General Electric Company

Filed Aug. 25, 1969, Ser. No. 852,598
Int. Cl. B63h *11/10*
U.S. Cl. 239—265.19 **8 Claims**



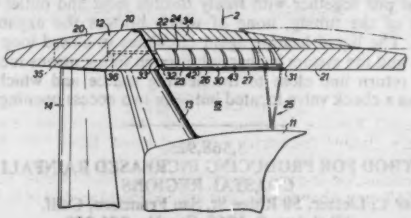
A target-type thrust reverser for a gas turbine engine. The reverser utilizes blocker doors positioned within an exhaust nozzle for turning the main portion of exhaust gas flow radially outwardly. The doors are staggered to permit a percentage of exhaust gas flow to leak therethrough. Swirl inducers formed as part of the doors provide a circumferential velocity vector to the leakage flow and thereby induce a high total pressure loss in the leakage flow. The forward thrust associated with the leakage flow is thereby minimized.

3,568,931

THRUST REVERSER

James Oswald Mortlock, Derby; Francis Jeffrey Colville, Sutton-in-Ashfield, and James Millward, Nuthall, England, assignors to Rolls-Royce Limited, Derby, England

Filed Sept. 9, 1969, Ser. No. 856,426
Claims priority, application Great Britain, Sept. 11, 1968, 43257/68
Int. Cl. B64c *15/04*
U.S. Cl. 239—265.31 **11 Claims**



A thrust reverser comprises a cylindrical casing having an apertured portion; a plurality of thrust reverser members which are mounted within the casing and are movable

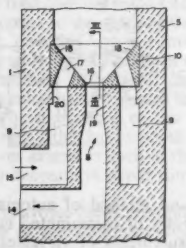
between a thrust reversal position, in which they block the casing to fluid flow therethrough and force the fluid to pass out through the said apertured portion, and a forward thrust position in which they permit the fluid to flow through the casing but block a part only of the apertured portion; a plurality of additional members which are disposed within the casing and are movable between a forward thrust position, in which they block at least most of the remaining part of the apertured portion, and a thrust reversal position, in which they permit the fluid to pass out through the apertured portion; a sleeve member which is movable over the casing between forward thrust and thrust reversal positions in which the apertured portion is respectively closed and opened to fluid flow therethrough; interconnecting means which interconnect the thrust reverser members, the additional members and the sleeve member so that the movement of all these members between their thrust reversal and forward thrust positions occurs simultaneously; and power-operated means for effecting the movement of the said members.

3,568,932

CERAMIC BURNERS

Jacobus Van Laar, Santpoort, and Johannes H. W. Ouwerkerk, Ijmuiden, Netherlands, assignors to Didier-Werke A. G., Wiesbaden, Germany

Filed Oct. 17, 1969, Ser. No. 867,988
Claims priority, application Germany, Oct. 19, 1968, P 18 03 984.4
Int. Cl. B05b *7/06*
U.S. Cl. 239—424.5 **9 Claims**



A ceramic burner for hot blast stoves for blast furnaces. A ceramic block has a central hole and a crown of holes surrounding it. A vertical conduit feeds gaseous fie; and a second coaxial conduit supplies combustion air. The conduits have their upper ends passing through the holes. The upper surface of the block slants upwardly from the central hole and the holes of said crown are directed toward the prolonged axis of the central hole. The central hole has essentially the shape of a rectangular slot and the sloping part of the upper surface of the block comprising essentially two flat surfaces which comprise an angle of 40°—120°, and the crown of holes is subdivided into two rows of holes running parallel to each other and to the longitudinal sides of said central hole. The rectangular shape of the central hole shows a ratio of length versus width between 4:1 and 6:1 and the slot width is less than 600 mm. Each of the two rows of holes has at least four holes the middle axis of which form together with the prolongation of the axis of the central hole an angle ranging from 20° to 70°.

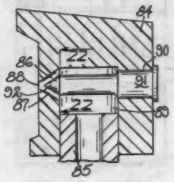
3,568,933

SPRAY NOZZLES

Richard Terence Macguire-Cooper, Benson, Oxon, England (c/o Oxford Industrial Group, Navron House, St. Helens Ave.)

Continuation-in-part of application Ser. No. 614,904, Feb. 9, 1967, now abandoned. This application Mar. 5, 1969, Ser. No. 806,025
Int. Cl. B05b *1/26*
U.S. Cl. 239—543 **9 Claims**

A spray nozzle for the spraying of liquid particles, comprising a plurality of converging jet-forming passages for directing the flow of fluid, wherein a cavity is positioned at the location of the convergence of said passages. The nozzle opening for expelling the converging streams of fluid is formed at substantially the point where the axes of the jet-forming



passages intersect or, in the case where the axes do not intersect, at substantially the point where the axes intersect if the axes are projected onto a plane in which one of the axes is located.

3,568,934

GAS RING FOR FUEL BURNER

John Dunn, Montvale, N.J., assignor to Peabody Engineering Corporation, New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,952
Int. Cl. B05b *1/18*
U.S. Cl. 239—567 **6 Claims**

A gas ring for fuel burners having a burner throat, the ring having an inside diameter substantially the same as that of the throat and having a peripherally spaced set of elongated nozzles or fingers extending radially (inward) from the ring. The fingers have discharge openings in at least one side and are oriented to discharge gas well within the air stream in said burner throat at various angular positions to which they may be adjusted. Such fingers may be used alone or in conjunction with conventional gas exit orifices spaced around the inner periphery of the ring.

3,568,935

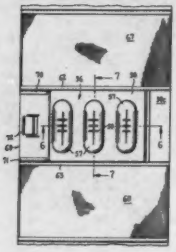
HINGED SPRAY PLATE AND BOX FOR DISHWASHERS

Roger L. Hoffman, Pequannock, N.J., assignor to General Electric Company

Filed Feb. 17, 1969, Ser. No. 799,752
Int. Cl. B05b *1/14*
U.S. Cl. 239—568 **9 Claims**

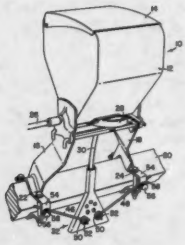
A spray box connectable to a water inlet in a dishwasher and including a separate spray plate hinged to the spray box and releaseably closeable thereover by means of a quick release fastener whereby to facilitate cleaning of the spray box and spray plate, the spray plate being formed preferably

with three parallel semicylindrical protrusions each of which contains a plurality of spaced slots, and a sealing gasket being



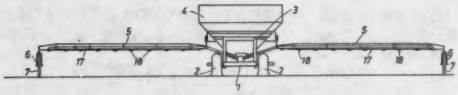
located between the confronting surfaces of the spray plate and the spray box.

3,568,936
DIFFUSER FOR GRANULAR MATERIAL
Darrel Lee Honnold, Winterset, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Feb. 24, 1969, Ser. No. 801,541
Int. Cl. B05b *1/14*
U.S. Cl. 239—590.5 **5 Claims**



A diffuser for granular herbicide dispensers which is formed of two sections constructed from plastic. Each section consists of a generally vertical wall having flanges along its side edges and a plurality of integrally formed protrusions. When the two sections are placed together the flanges overlap and the protrusions abut. The flanges which form sidewalls are generally downwardly divergent so that, as material is dispensed through the diffuser it strikes the protrusions and is spread laterally over a relatively wide area.

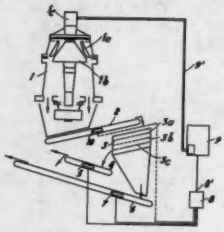
3,568,937
SPREADER FOR SPREADING PULVERULENT AND GRANULAR MATERIALS
Xavier Roger Grataloup, Montereau, France, assignor to Societe Anonyme: Nodet-Gougis, Montereau, France
Filed Aug. 8, 1969, Ser. No. 848,450
Claims priority, application France, Aug. 14, 1968, 163,166
Int. Cl. A01c *15/04*
U.S. Cl. 239—655 **6 Claims**



The present invention relates to a forced-air spreader for spreading pulverulent or granular material.

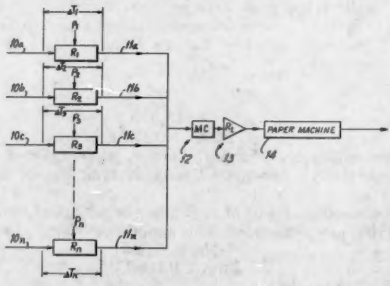
This spreader comprises a frame which is adapted to be connected to a tractor and which is mounted on wheels and which carries a hopper adapted to receive pulverulent or granular material and to distribute it through proportioning units of known type to tubes of different lengths mounted on two arms pivotally connected to the hopper, pipe connections being provided whereby, from each proportioning unit, the distributed material passes transversely into the neck of a venturi which at its inlet receives air supplied by a centrifugal fan and which produces, in the respective pipe connection, a suction effect that draws in the said material, this material being entrained by the current of air, being projected out of the venturi with acceleration, and escaping through the respective pivotally mounted tube, which at its end is provided with a deflector or dividing element dispersing the material thus entrained and projected, and the pivotally mounted tubes thus effecting the uniform distribution of the material over the ground.

3,568,938
CONTROLLING THE GRANULOMETRY OF MATERIAL
Paul Marcel Emile Barrot, Clichy, and Claude Yves Lucien Lemardley, Paris, France, assignors to Societe Anonyme: Babbitless, Paris, France
Filed May 17, 1968, Ser. No. 730,059
Claims priority, application France, May 31, 1967, 108,609
Int. Cl. B02c *4/32*
U.S. Cl. 241—24 **40 Claims**



Apparatus for and method of automatically providing a constant granulometry of comminuted materials, by making simultaneous measurements of variables with respect to a given mesh to form an output signal, comparing said signal with a reference signal obtained from one of a family of characteristic grinding curves and generating from the result-ing signal the corrections necessary to maintain the granulometry constant.

3,568,939
METHOD AND APPARATUS FOR CONTROLLING PULP REFINERS
Donald B. Brewster, New York, N.Y.; Philip H. Emery, Jr.; Robert C. Hatcher, and Cheng S. Lin, Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.
Filed Oct. 3, 1968, Ser. No. 775,975
Int. Cl. B02c *25/00, 21/00*
U.S. Cl. 241—28 **12 Claims**



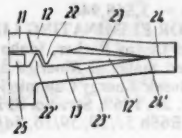
A control system, receiving inputs from a group of grinders or refiners, generates a signal representative of overall grind-

ing or refining action. Operating from this signal, the control system controls at least one of the grinders or refiners in the group such that the cumulative qualitative output from all the grinders or refiners is equal to a desired set point.

3,568,940
COAXIAL DISC REFINING APPARATUS FOR RECLAIMING RUBBER SCRAP

Herbert Alfred Merges, 6451 Wolfgang, Germany

Original application July 12, 1966, Ser. No. 564,694, now Patent No. 3,460,769, dated Aug. 12, 1969. Divided and this application Aug. 19, 1968, Ser. No. 766,353
Int. Cl. B02c 7/04
U.S. Cl. 241—47 3 Claims



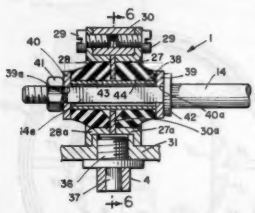
A rubber reclaiming apparatus includes two circular, coaxial discs in a housing. One disc is stationary and has a central feed opening and a circular row of spaced teeth about the opening. The other disc is driven and carries a central impeller opposite the feed opening and a circular row of spaced teeth closely juxtaposed to the teeth of the stationary disc in a radially inward direction in a common radial plane. Respective annular working face portions of the two discs extending from the teeth in an outward direction are conical and approach each other axially toward the disc peripheries. The annular, outermost portions of the working faces are radial, parallel to each other and smooth. Circumferentially spaced radial grooves extend in each of the conical face portions and gradually decrease in depth toward the radial face portions.

A coaxial screw conveyor feeds pretreated rubber scrap to the supply opening of the stationary disc, and the tubular shaft of the screw supplies steam. The material circumferentially discharged from the discs is collected.

3,568,941
TRAVERSING MECHANISM FOR SPOOL WINDING

Peter Uelpenich, Oberbruch, Rhineland, Germany, assignor to Glanzstoff AG, Wuppertal, Germany

Filed Oct. 28, 1968, Ser. No. 771,235
Claims priority, application Germany, Oct. 28, 1967, P 15 74 356.3
Int. Cl. B65h 54/28
U.S. Cl. 242—43 5 Claims

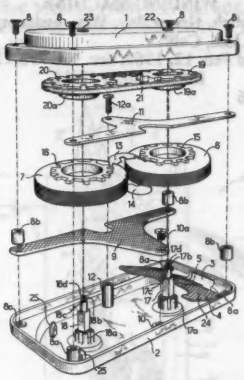


Traversing mechanism for rapidly winding a thread onto a rotating spool in which a traversing rod carrying one or more thread guides is reciprocally driven in a linear axial path by cam means constructed to abruptly brake and reaccelerate the rod at the points of reversal of its reciprocation, the rod and cam means being coupled or interconnected by resilient coupling means in the nature of an elastomeric vibration damping connector.

3,568,942
CARTRIDGE FOR ENDLESS TAPE HAVING A NOTCHED EDGE

Serge Leon Louis Cailliot, 38,rue du Bois de Boulogne, Neuilly-sur-Seine, France

Filed Jan. 13, 1969, Ser. No. 790,740
Int. Cl. B65h 17/48; G11b 5/00
U.S. Cl. 242—55.17 14 Claims

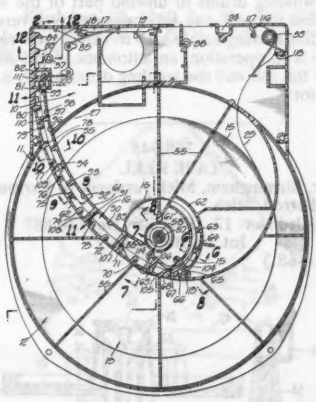


A cartridge for an endless tape having a notched edge comprises two spools mounted on parallel axes and provided with peripheral protuberances mating with said notches. A motor is provided for driving one spool in one direction at a predetermined speed and a second motor is connected for driving the other spool in the opposite direction at a different speed when the first motor is inoperative. Gear or belt means are provided to drive either spool from the other.

3,568,943
MOTION PICTURE FILM CARTRIDGE

Edward Robak, Garden Grove, Calif., assignor to Technicolor Inc., Hollywood, Calif.

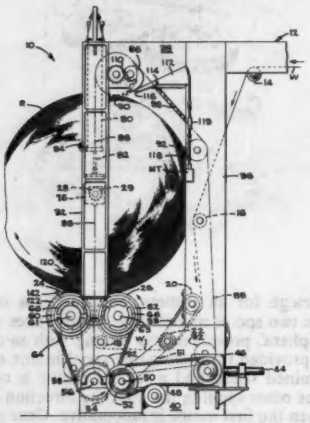
Filed May 19, 1969, Ser. No. 825,504
Int. Cl. B65h 17/48; G11b 23/06
U.S. Cl. 242—55.19 12 Claims



There is disclosed herein a cartridge for a continuous loop roll of motion picture film, such as Super 8 sound motion picture film. The cartridge includes top and bottom sections, and a turntable disposed between the sections for supporting a roll of film, such as 600 feet in length. One section of the cartridge includes a film guide channel for directing the inner convolution of film from the central portion of the roll to a

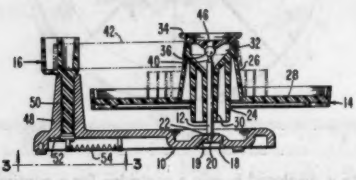
film gate engaging portion of the cartridge for projection of the film which, after projection, is returned to the outer convolution of the roll. The film guide channel includes a plurality of molded projections which cause the film to be supported essentially solely by an edge thereof to prevent rubbing of either surface of the film thereby preventing abrading and scratching of the surfaces of the film.

3,568,944
WINDING MACHINE
Orrin H. Besserdich, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Feb. 12, 1969, Ser. No. 798,712
Int. Cl. B65h *17/08*
U.S. Cl. 242—66 **5 Claims**



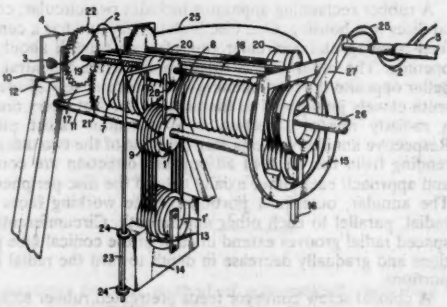
A winding machine, of the vertical type having double winding drums and a spindle cradled between the winding drums to frictionally drive a web onto the spindle, is provided with an automatically operated power lift mechanism on the spindle. As the roll accumulates on the spindle and its weight increases, the lift mechanism offsets a predetermined part of the weight of the roll so that it maintains a condition of optimum pressure on the web being fed between the winding drums and the roll. The same lift mechanism lifts the finished roll off the winding drums to unwind part of the web from the roll so that the web can be conveniently severed above the drums, thus leaving ample web to start a new roll. When the machine is in operation, an automatic guard shields the nip between the roll and the winding drum which is exposed to the operator.

3,568,945
TAPE REEL
Neal Hepner, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Nov. 12, 1968, Ser. No. 774,887
Int. Cl. B65h *17/02*
U.S. Cl. 242—68.3 **2 Claims**



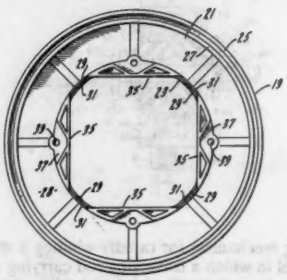
The disclosure embodies a reel which is rotatable about a vertical axis to unwind a roll of tape being pulled either from the inner end of the roll or from the outer end of the roll. The reel is mounted to rotate about a vertical shaft which in one mode of operation of the reel projects upwardly into a closed chamber of the reel hub. A bearing in the form of a ball rests in a socket in the top of the shaft and a hubcap has a socket to receive the ball such that the entire weight of the reel rests on the ball and rotates substantially freely on the shaft. In this mode, the reel is employed to unwind nonrewound tape or a roll of tape of which the lead end is the inner end. The reel is usable in another mode merely by inverting it whereupon the ball is displaced and entrapped in the chamber, the tape now functioning to take the thrust of the reel against a stationary mounting base. In this mode, tape is unwound from a roll of rewound tape of which the outer end is the lead end. The thrust of the hubcap against the mounting provides a drag on the reel which is desirable to prevent acceleration of the wheel by its inertia.

3,568,946
APPARATUS FOR ELIMINATING LINE TWIST
Jesse I. Anderson, and DeRay Parker, Idaho Falls, Idaho, assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 27, 1969, Ser. No. 811,026
Int. Cl. B65h *51/20, 59/36, 54/28*
U.S. Cl. 242—85 **1 Claim**



This invention is an apparatus for preventing twisting, kinking, fouling and intertwining of lines attached to rotational devices. A weighted block and tackle arrangement is used for each line, in combination with a grooved takeup drum. A separate portion of the drum is used for the takeup of each line.

3,568,947
FISH TAPE REEL WITH INTERLOCKING TABS
Johannes A. E. Oprins, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.
Filed Dec. 26, 1968, Ser. No. 787,091
Int. Cl. B65h *75/36*
U.S. Cl. 242—85.1 **3 Claims**



An electrician's fish tape reel including a pair of identical, generally annular shaped reel sections removably connected

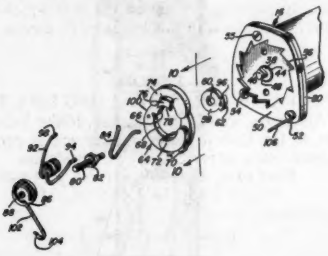
to each other. The reel sections fit together in alignment through means of tabs and recesses formed in the reel sections adjacent the inner walls thereof. The tabs and recesses fit together only in selected positions of rotation of the reel sections relative to each other.

3,568,948

DUAL FUNCTION SEAT BELT RETRACTOR

Joel A. Burns, 917 Bank of the Southwest, Amarillo, Tex.

Filed Jan. 14, 1969, Ser. No. 790,979
Int. Cl. B65h *75/48*
U.S. Cl. 242—107.4 **5 Claims**



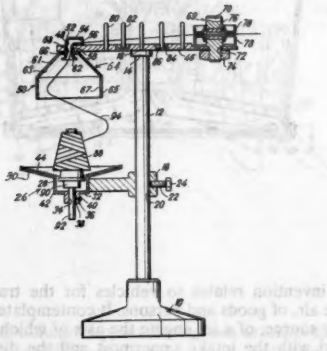
A rotary lock assembly comprising a base having a shaft journaled therefrom for rotation in opposite directions between a first position and a second position through a third intermediate position a predetermined number of degrees of rotation from the first position toward the second position. The assembly includes deactivatable inertia actuated lock structure operatively associated with the shaft and the base and responsive to acceleration of rotation of the shaft above a predetermined value in one direction of rotation of the shaft toward the second position to lock the shaft against further rotation in that direction. Further, the assembly includes structure responsive to disposition of the shaft in a position between the first position and the intermediate position for deactivating the locking structure.

3,568,949

YARN BALLOON DAMPING DEVICE

Miloslav Riha, Rybniky, and Karel Vystrcil, Vypustky, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho Strojirenstivi, Brno, Czechoslovakia

Filed Oct. 9, 1968, Ser. No. 766,138
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 **9 Claims**



A device to prevent ballooning of yarn when it is being intermittently withdrawn from a stationary bobbin. An angular guide slightly brakes the yarn, so that during or at the end of a withdrawal cycle centrifugal forces will cause the yarn to whip against the inner surfaces of the conical and cylindrical sections of the balloon limiter substantially dampening any ballooning action by the yarn. The yarn is further braked by passing it across a plurality of pins mounted in a plurality of planes on a carrier.

3,568,950

BOBBIN TRUCK FOR ARRANGING TRANSFER TAIL

Shigeyasu Niwa, Matsuyama-shi, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Mar. 6, 1969, Ser. No. 804,805
Int. Cl. B65h *49/02;* **D02h** *1/00;* **D03j** *5/08*
U.S. Cl. 242—131 **5 Claims**

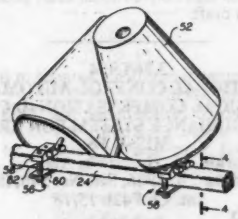
This invention is intended to wind up a loose transfer tail of yarn on the end of a bobbin, and to fix the tail end of yarn with an adhesive tape, etc. while rotating the bobbin on a bobbin truck wherein bobbin holder supporting plates are fixed onto the stanchions or plates of the bobbin truck. A number of bobbin holders are mounted on the bobbin holder plates and are made rotatable with a rotation drive disposed at the outer end of the bobbin holder. When a bobbin is put onto the bobbin holder, the bobbin can be manually rotated together with the bobbin holder by means of the rotation drive.

3,568,951

YARN PACKAGE MOUNTING FOR CREEL APPARATUS

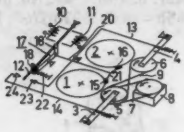
Joseph Neuburger, New York; Edward Vossen, Malverne, N.Y., and Edward W. Schussel, King of Prussia, Pa., assignors to Stop-Motion Devices Corporation, Plainview, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,072
Int. Cl. B65h *49/02;* **D02h** *1/00;* **D03j** *5/08*
U.S. Cl. 242—131 **5 Claims**



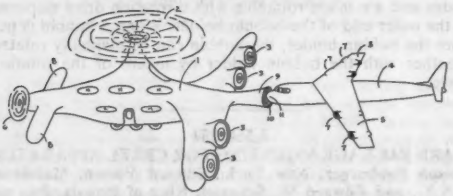
The yarn package mounting comprises a block assembly removably secured to a cross bar of the creel. A yarn package holder has a spindle terminating in an angularly related end portion which is inserted into an aperture on the block assembly for pivotal movement therein. The block assembly includes a pair of opposite bearing surfaces in the path of the spindle to limit the pivotal movement thereof between two positions which correspondingly define the two preferred positions for the yarn package on the creel.

3,568,952
RECORDING AND/OR PLAYBACK APPARATUS
Lothar Jager, Vienna, Austria, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 2, 1969, Ser. No. 812,827
Claims priority, application Austria, Apr. 5, 1968, A3346/68
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—204 **2 Claims**



A device for controlling the forward and reverse travel of a record carrier in a recording and/or playback device having an operational control lever displaceable in opposite directions from a rest position for activating either the forward or reverse travel and a mechanical linkage between the control lever and a brake release mechanism for the rotatable record carrier discs. Upon activation of the control lever in either direction, the brake will simultaneously be released from the discs.

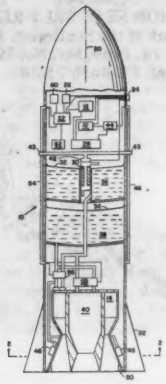
3,568,953
AIRCRAFT AND JET TAKEOFF AND LANDING SYSTEM
Dale L. Beezley, P.O. Box 41, Los Altos, Calif.
Filed Mar. 26, 1969, Ser. No. 810,702
Int. Cl. B64c *37/02;* **B64d** *5/00*
U.S. Cl. 244—2 **2 Claims**



An aircraft takeoff and landing system capable of nearly vertical takeoff and landing of any conventional aircraft by the use of an assist craft having rotary wing vertical takeoff and landing capability with rearwardly directed fans capable of providing lift to said conventional craft positioned closely behind said assist craft.

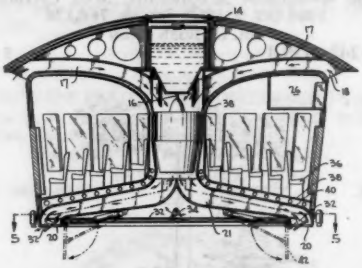
3,568,954
DIRECTIONAL CONTROL-AUTOMATIC METEOROLOGICAL COMPENSATION (D.C.-AUTOMET) INERTIAL GUIDANCE SYSTEM FOR ARTILLERY MISSILES
William C. McCorkle, Jr., Huntsville, Ala.
Filed Apr. 4, 1966, Ser. No. 540,480
Int. Cl. F42b *15/18*
U.S. Cl. 244—3.2 **9 Claims**

A missile system disposed for flight in a planned trajectory ending at a target. The trajectory includes booster propulsion and sustainer propulsion phases of flight. The missile is controlled in the booster propulsion phase by means of a directionally controlled (D.C.) inertial guidance system which controls thrust direction. Booster control means is provided for creating pressure differentials across the propulsive gases of the booster motor for thrust vectoring the missile to maintain the missile in the trajectory during the booster propulsion phase of flight. In the sustainer phase of flight, the missile is controlled by an automatic meteorological compensation inertial guidance system (AUTOMET) which controls thrust magnitude. Sustainer control means is provided for varying the thrust of the sustainer to maintain the difference in the actual and desired velocities at null and thus maintain zero net axial force on the missile in the sustainer phase of flight. The system is, therefore, known as the D.C.-AUTOMET guidance system.



Previous inertial guidance systems utilized a stabilized platform having a number of accelerometers mounted thereon. A plurality of gyroscopes were needed to provide a reference for the stabilized platform. Furthermore, in guidance systems of this type, very expensive precision instruments were required to perform the guidance and control functions.

3,568,955
BLOWHARD VTOL AIRCRAFT
James E. Mc Devitt, The Center, Martinsburg, W. Va.
Continuation-in-part of application Ser. No. 680,271, Nov. 2, 1967, now abandoned. This application Dec. 24, 1968, Ser. No. 786,574
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 **6 Claims**



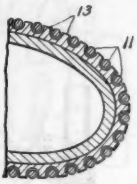
This invention relates to vehicles for the transportation, thru the air, of goods and persons. It contemplates the use, as a power source, of a jet engine the axis of which is vertically disposed with the intake uppermost and the discharge port lowermost, the structure of the vehicle encircling the engine. The products of combustion are conducted by conduits to outlet ports disposed in a circle the center of which is approximately on the axis of the engine and means is provided for controlling, and supplementing if necessary, the outflow of products of combustion in such manner as to supply maneuvering power.

3,568,956

MEANS FOR REDUCING AIR PRESSURE AGAINST LEADING EDGE PORTIONS OF AIRPLANE WINGS AND AILERONS

Clayton I. Swanson, 4029 Phinney Ave. North, Seattle, Wash.

Filed Oct. 3, 1968, Ser. No. 764,830
Int. Cl. B64c *1/38, 23/02*
U.S. Cl. 244—41 1 Claim



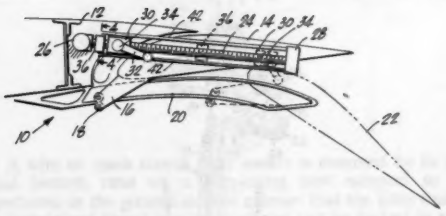
This disclosure relates to means for reducing the back pressure of a fluid against a vehicle moving in, on or through said fluid. It can be applied to both air- and waterborne vehicles. When applied to waterborne ships and the like it reduces back pressure and friction of the water against their prow portions. When applied to air vehicles which travel at supersonic speeds it reduces air pressure and air friction against the leading edges of wings, ailerons, nose cones and the like and helps to prevent overheating and sonic boom.

3,568,957

LONG STRUCTURAL COLUMN SUPPORT

Lorin A. Wood, Lakewood, Calif., assignor to McDonnell Douglas Corporation

Filed Nov. 13, 1968, Ser. No. 775,273
Int. Cl. B64c *3/38, 9/02*
U.S. Cl. 244—42 3 Claims



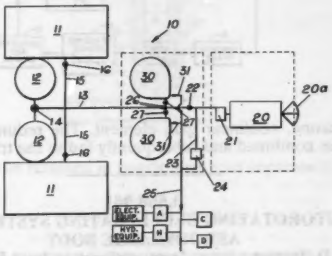
A structural column support having two external superimposed threads of different lead whereby a load carrying nut moves along the column at a higher rate than the screw support sleeve which follows the threads of lesser lead. The sleeve thus divides a single long column into two shorter columns which may be of a smaller diameter and lesser weight than the longer unsupported column, while resisting the same bending and buckling compressive forces.

3,568,958

AIRCRAFT

Kenneth Joseph Bhore, Derby, England, assignor to Rolls-Royce Limited, Derby, England

Filed June 6, 1968, Ser. No. 735,002
Int. Cl. B64d *27/02*
U.S. Cl. 244—55 9 Claims



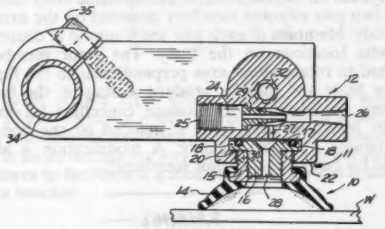
An aircraft having power plant comprising a plurality of main engines arranged to produce forward propulsion of the aircraft, and a further engine which alone comprises means to provide reverse thrust for the aircraft.

3,568,959

VACUUM CUP TYPE WORK GRIPPING MEANS

Leland F. Blatt, Grosse Pointe, Mich. (24121 Mound Road, Warren, Mich. 48091)

Filed Apr. 9, 1969, Ser. No. 814,687
Int. Cl. A47b *47/00;* B66c *1/02*
U.S. Cl. 294—64 3 Claims



A vacuum cup type of work gripping means such as is shown in FIG. 4 of U.S. Pat. No. 3,349,927 of Oct. 31, 1967, of Leland F. Blatt, the undersigned, characterized by the provision of a three-way valve in its supply line and further characterized by a novel arrangement of separate parts facilitating manufacture, assembly, and part replacement.

3,568,960

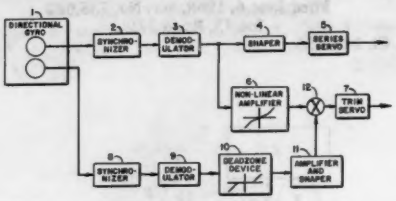
HELICOPTER FLIGHT CONTROL SYSTEM

Carl D. Griffith, Scottsdale, Ariz.; Victor H. Levi, El Cajon, and John S. McBrayer, Woodland, Calif., the United States of America as represented by the Secretary of the Army.

Int. Cl. B64c *17/00*
U.S. Cl. 244—77 10 Claims

This invention relates to a heading control system for flight control of a helicopter of the single rotor type. Nonsimilar, redundant signals from a directional gyro are separately processed in a nonlinear manner so as to produce a more accurate and rapid trim response. One of the redundant signals, responsive to heading error, is processed and fed to a non-

linear gain element. The other of the redundant signals, responsive to heading rate of change, is processed and fed to

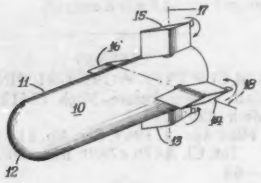


a deadzone, nonlinear gain element. The redundant signals are then combined and subsequently fed to the trim servo.

3,568,961
AUTOROTATING DECELERATING SYSTEM FOR AERODYNAMIC BODY

James D. Iversen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 26, 1969, Ser. No. 802,473
Int. Cl. B64c *9/32*
U.S. Cl. 244—113 **4 Claims**

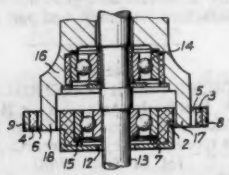


A system for decelerating an aerodynamic body includes at least two pair of rotor members mounted on the exterior of the body. Members of each pair are mounted at diametrically opposite locations on the body. The rotor members are adapted to rotate about axes perpendicular to the flight line of the body and thereby produce a drag on the body. By rotating the members to produce cancelling lift forces, a greatly increased drag force is induced on the body while maintaining its static stability. A modification is also disclosed for powering the rotor members.

3,568,962
VIBRATION-INHIBITING MOUNTING ELEMENT FOR SMALL ELECTRIC MOTORS

Hans-Joachim Janssen, Hundsmuehlen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 30, 1968, Ser. No. 771,828
Int. Cl. F16f *15/04*
U.S. Cl. 248—15 **7 Claims**

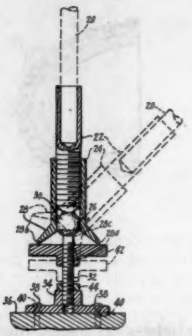


A unitarily constructed mounting element which inhibits the transmission of vibrations from a small electric motor to the device or instrument to which the motor is attached. The element includes at least two zones having differing energy loss factors. One of the zones provides damping to prevent the transmission of high-frequency radial vibrations, while another of the zones serves as insulation to prevent the transmission of low-frequency tangential vibrations.

3,568,963
MOUNTING

Arthur A. Koskinen, 4458 Soquel Drive, Soquel, Calif.

Filed Sept. 11, 1969, Ser. No. 857,157
Int. Cl. A45b *25/00*
U.S. Cl. 248—42 **8 Claims**

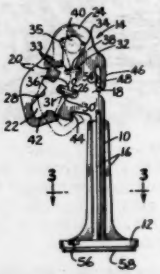


A mount holding a vertical rod with a ball at its top positioned in a ball joint opening of a housing having an umbrella holder within a bore extending from the ball joint opening at the top of the housing. When the umbrella holder is slightly raised so that the ball is no longer being forced against the ball joint opening, the housing may be pivoted about the ball. A nut on the vertical rod supports the housing which has a conical bottom extending below the ball so that the housing is tilted by adjusting the height of the nut. In another embodiment a slot at the housing bottom allows the housing to be tilted past the vertical rod to a horizontal position. In another embodiment the ball is locked into position by means of a cam and plunger.

3,568,964
CABLE MOUNTING

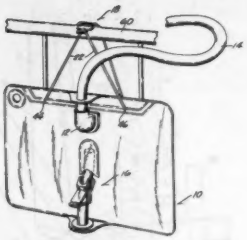
John W. Perkins, Deerfield, Ill., assignor to Gavin Instruments Inc.

Filed Dec. 9, 1968, Ser. No. 782,144
Int. Cl. F16l *3/22*
U.S. Cl. 248—68 **7 Claims**



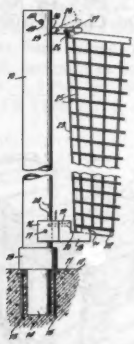
A standoff mounting for cables and the like includes an elongated post constructed to be fastened at one end to a surface of a building structure and having a resilient head at the other end. The head includes a pair of spaced half portions, one of which is resiliently moveable with respect to the other, and the head also includes a plurality of notches for receiving the cables. A clamp is formed on the head for maintaining the spaced half portions positioned so as to firmly hold the cables in the notches.

3,568,965
SUPPORT APPARATUS FOR A BAG
James L. Clark, Whitefish Bay, Wis., assignor to Plastronics, Inc., Milwaukee, Wis.
Filed Feb. 12, 1969, Ser. No. 798,630
Int. Cl. F16g 11/02, 11/14
U.S. Cl. 248—95 3 Claims



A support apparatus for a bedside drainage bag comprising a support cord fastened to the bag and a support clamp means permanently attached to the ends of the cord and adapted for releasable engagement with the central portion of the cord. The support clamp is made of metal material in the form of a one-piece stamping.

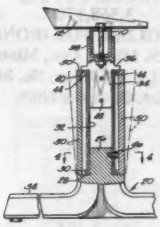
3,568,966
LITTER BASKET MOUNTING AND LOCKING MEANS
Ciro J. Lucci, 402 Foster Ave., Brooklyn, N.Y. 11230
Filed Oct. 4, 1968, Ser. No. 765,065
Int. Cl. B65f 1/14
U.S. Cl. 248—154 5 Claims



A wire or mesh screen litter basket is mounted by its top and bottom rims on a supporting post adapted to be anchored in the ground in such manner that the litter basket is maintained above ground level and can be locked in supported position from which it can be released only by unlocking with the proper key.

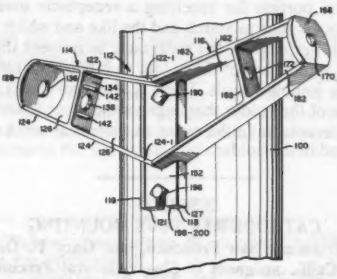
3,568,967
MODULAR FURNITURE BASE
Ronald T. Furtak, Chicago, and Robert W. Schier, Glenview, Ill., assignors to Krueger Metal Products, Inc., Green Bay, Wis.
Filed Apr. 9, 1969, Ser. No. 814,643
Int. Cl. F16m 11/20
U.S. Cl. 248—188.1 4 Claims

Furniture items are mounted on a support bar which is carried by a plurality of base assemblies each including feet and an upright leg and a bar supporting channel, the leg having fairing strips at opposite sides thereof merging with the feet and the bar supporting fitting and interlocked with the feet of



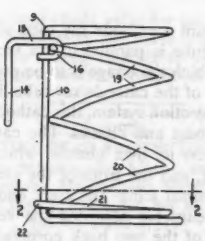
the fitting to be retained in position without separate connection.

3,568,968
UTILITY WIRE SUPPORTING BRACKET
Edwin C. Taylor, New Haven, Conn., assignor to MIF Industries, Inc., Branford, Conn.
Filed Apr. 16, 1969, Ser. No. 816,698
Int. Cl. F16m 13/00; H01b 17/16
U.S. Cl. 248—221 12 Claims



A bracket of the type which supports power wires is formed of two elements which assemble to form a complete bracket assembly for mounting upon a pole. The elements interlock in an advantageous way, and also provide certain special features to facilitate the mounting of electrical insulators upon the bracket.

3,568,969
WIRE HOLDING CUP AND SPRING COMBINED
Thomas G. Boman, Pataskala, Ohio (P.O. Box 203 Kirkesville, Ohio 43033), and Edward F. Sparks, 106 Fisher Road, Buffalo, N.Y.
Filed July 7, 1969, Ser. No. 839,570
Int. Cl. A47k 1/08
U.S. Cl. 248—311 4 Claims



Our invention involves the use of a flexible element, shaped to serve as a holder or container unit, the size of the

unit being varied as the element is flexed, and a gripping arm associated with and movable in proportion to the flexing of the said flexible element.

3,568,970

RECEPTACLE HOLDER FOR IRONING BOARDS

John E. Mallett, 6715 N. Miami Ave., Miami, Fla.

Filed Oct. 13, 1969, Ser. No. 865,644
Int. Cl. A47k *1/08*
U.S. Cl. 248—311 2 Claims

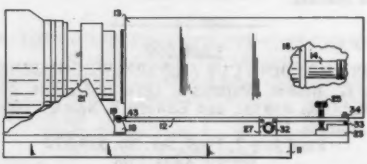
A receptacle holder for ironing boards being removably secured to the edge of a conventional ironing board having a circular rim portion for receiving a receptacle used in the ironing process such as starch and the like and which engages the outer lower edge of the receptacle to prevent the receptacle from spilling out of the holder as it becomes tilted upon jostling the ironing boards. There is also provided a member at the base of the holder that engages the inner lower edge of the tilted receptacle in the event an extremely small receptacle is placed in the holder.

3,568,971

CATHODE RAY TUBE MOUNTING

Howard I. Jarmy, San Francisco, and Gary D. Oates, Los Gatos, Calif., assignors to Singer-General Precision, Inc., Binghamton, N.Y.

Filed Dec. 11, 1968, Ser. No. 782,929
Int. Cl. F16m *11/14*
U.S. Cl. 248—350 4 Claims



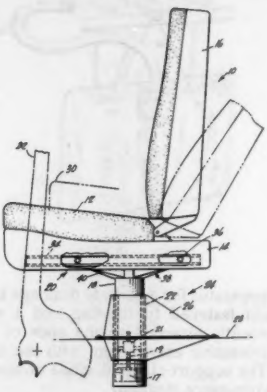
In order to mount a cathode ray tube so that the face of the cathode ray tube is parallel to the faces of the optical system through which the image is to be projected and to insure that the axis of the cathode ray tube lies upon the optical axis of the projection system, this cathode ray tube mount utilizes separate base and chassis. The cathode ray tube is rigidly mounted on its own chassis, which may include a complete housing, and the front of the chassis is supported on a ball or universal joint. The back end of the chassis is provided with means for adjusting the vertical and lateral position of each of the two back corners. In the preferred embodiment shown, the adjustment means are manually controlled screws, but any suitable adjustment means can be utilized.

3,568,972

INTEGRATED TRACKAGE PILOT SEAT

Gale K. Sherman, Tustin, Calif., assignor to McDonnell Douglas Corporation

Filed Apr. 14, 1969, Ser. No. 815,691
Int. Cl. B60n *1/02*
U.S. Cl. 248—419 5 Claims



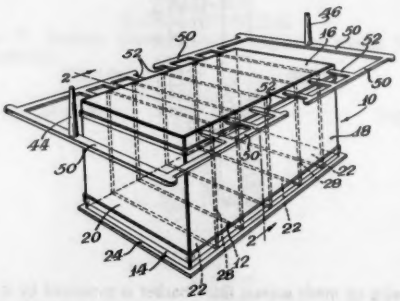
A seat telescopically mounted for vertical movement with structure for effecting all directions of motion (laterally and fore and aft) within the seat itself.

3,568,973

EDGE GATING OF THIN WALL CONTAINERS

Gerald A. Rau, and Le Roy W. Mason, Baraboo, Wis., assignors to Flambeau Plastics Corporation

Filed May 2, 1969, Ser. No. 821,238
Int. Cl. B29f *1/00*
U.S. Cl. 249—107 4 Claims



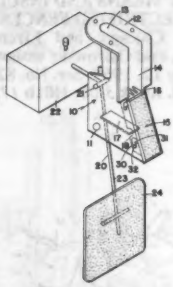
A gating system for molding thin walled, partitioned plastic containers. The container includes a bottom, a pair of sidewalls, and a pair of end walls, a juncture being defined between the bottom and sidewalls. Transverse walls extend between the sidewalls and are spaced intermediate the end walls. First and second spaced sprues are provided. A first pair of gates are spaced opposite each other and introduce plastic into the mold at the juncture between each of the transverse walls or between a transverse wall and each of the end walls. Two runners extend from the first sprue to each of the first pair of gates. A second pair of gates, similar to the first pair of gates, are provided and a second pair of runners, similar to the first pair of runners, extend from the second sprue to each of the second pair of gates.

3,568,974

DETACHABLE FRONT FLUID DISPENSING HEAD

Clifford Delorme, Saint James, Manitoba, Canada, assignor to Arnett Company Limited, Manitoba, Canada

Filed Dec. 30, 1968, Ser. No. 787,740
Int. Cl. F16k 7/06
U.S. Cl. 251—7 1 Claim



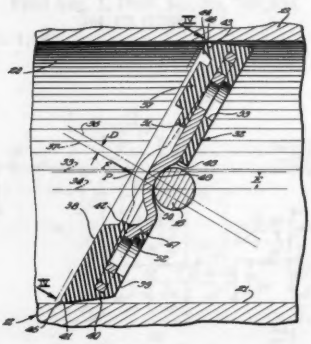
A dispensing head includes a body portion with an open-faced channel extending downwardly therethrough and detachable cover plate so that a compressible dispensing tube can be laid in the channel without having to thread same through the body portion. The plate has a pair of semicylindrical recesses one of which receives a compressing member to close off the tube, the cover plate being reversible to facilitate engagement with the body portion and thus ensuring that one of the recesses is always in the correct position to receive the compressing member.

3,568,975

BUTTERFLY FLUID FLOW VALVE

Frank E. Obermaier, Park Ridge, and Arthur A. Scott, Prospect Heights, Ill., assignors to Eaton Yale & Towne Inc.

Filed Mar. 6, 1968, Ser. No. 710,927
Int. Cl. F16k 31/16, 1/226
U.S. Cl. 251—58 4 Claims



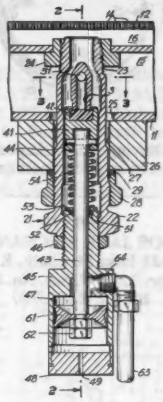
A vacuum actuated butterfly fluid flow valve including a valve body having a cylindrical bore formed therein between fluid inlet and outlet connections, a leakproof butterfly valve plate mounted within the bore on a rotatable operating rod and a vacuum motor having an operating member connected to the operating rod for rotating the rod and the valve plate upon actuation of the vacuum motor.

3,568,976

VALVE FOR PRESSING MACHINE

Fred W. Thumm, Wyckoff, N.J., assignor to New York Pressing Machinery Corp., New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,776
Int. Cl. F16k 31/12
U.S. Cl. 251—63.6 7 Claims



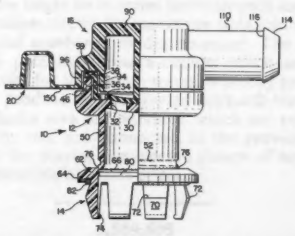
A valve for a pressing machine formed as a closed unit having a central shaft which controls a valve at one end for permitting the delivery of live steam to a pressing surface, with operation of the valve being controlled by means of a piston at the other end of the shaft operated on by air pressure, with a seal surrounding the shaft to prevent communication between the live steam and the compressed air.

3,568,977

VALVE ASSEMBLY

John F. Nelson, Des Plaines, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Jan. 29, 1969, Ser. No. 796,306
Int. Cl. F16l 37/28; F16k 15/16
U.S. Cl. 251—148 18 Claims



A one-way flap-type check valve for use with low pressure installations. All portions of the valve are capable of being snapped together in sealing relation to one another and in sealing relation to an apertured workpiece.

3,568,978

TIRE BEAD PROTECTOR

Lester L. Larson, Minneapolis, Minn., assignor to Paul E. Hawkinson Company, Minneapolis, Minn.

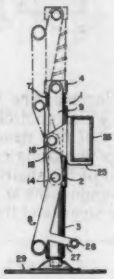
Filed June 9, 1969, Ser. No. 831,625
Int. Cl. B60c 25/14
U.S. Cl. 254—50.1 2 Claims

A tire bead protector for use with a pneumatic tire spreader during a retreading process. The protector consists

of a pair of identical semicircular lengths of cast high

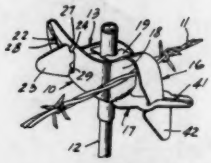
strength aluminum having an L-shaped cross section and connected end-to-end by a quick operating latch mechanism.

3,568,979
FLOOR JACK MECHANISM
Leo J. Notenboom, 121 Lake St. South, Kirkland, Wash.
Filed Apr. 1, 1969, Ser. No. 812,272
Int. Cl. B66f *3/00*
U.S. Cl. 254—116 **8 Claims**



A jack mechanism is disclosed for use with wheeled vehicles to transfer the weight of the vehicle from the wheels to the jack. A support leg telescopes from a barrel frame to the ground. The leg is raised and lowered by a foot operated lever arm pivotally attached to the barrel and attached to the leg by a compression member. The lever arm acts against the force of a spring interposed between the leg and barrel to lower the leg. The spring aids in raising the leg.

3,568,980
ATTACHMENT MEANS AND INSULATOR FOR ELECTRIFIED FENCES
Robert S. Hulburt, Chicago, and Efrem M. Ostrowsky, Highland Park, Ill., said Ostrowsky assignor to said Hulburt
Filed May 12, 1969, Ser. No. 823,857
Int. Cl. A01k *3/00*; **H01b** *17/16*
U.S. Cl. 256—10 **19 Claims**



Reusable flexible, insulating members have a pair of oppositely extending arms deflectable into a configuration encircling an adjoining fence wire and characterized by locking means for forming a closed loop to restrain electrically conductive fence wire against displacement. A body portion of each member is characterized by standoff projections spacing the flexible, insulating members outwardly of the fence post. Also, the body portion may include a plurality of post attachment means configured to facilitate attachment to fenceposts of a variety of configurations, for example T-posts and rods.

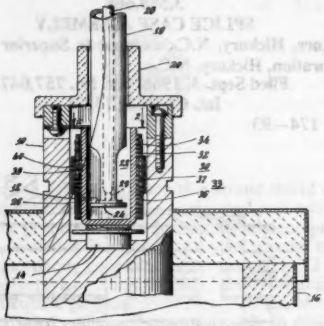
3,568,981 thru 3,569,601

VOID

ERRATA

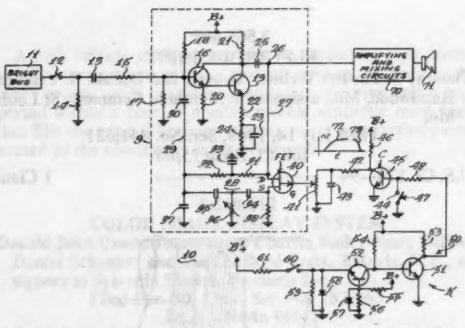
For Classes 176—65 and 210—35 see:
Patent Nos. 3,568,781 and 3,568,833

3,569,602
TEMPERATURE PROGRAMMING APPARATUS WITH A HEATING SENSING ARRANGEMENT
Stanley Norem, Bayside, N.Y., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed July 7, 1969, Ser. No. 839,276
Int. Cl. H05b *3/62*
U.S. Cl. 13—24 **10 Claims**



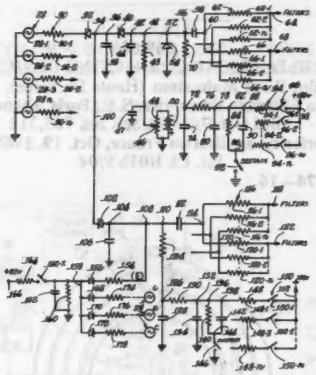
An apparatus for varying the temperature of a material over a range of temperatures in a programmed manner includes an electric furnace which is heated both by a heater element which exhibits a relatively nonlinear resistance-temperature characteristic and a linearizing electrical impedance coupled to the element to provide a relatively linear resultant resistance-temperature characteristic. The heating element and linearizing impedance are positioned with respect to the furnace for transferring to the furnace thermal energy created by the dissipation of electrical energy therein.

3,569,603
MOVING FORMANT BAND-PASS AMPLIFIER FOR AN ELECTRONIC MUSICAL INSTRUMENT
Donald R. Kern, Buffalo Grove, Ill., assignor to Hammond Corporation, Chicago, Ill.
Filed Aug. 1, 1968, Ser. No. 749,334
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.19 **11 Claims**



A circuit for achieving the moving or changing formant effect in an electronic musical instrument such as an electric organ. The circuit employs a band-pass amplifier with parallel T resistive-capacitive feedback circuits in which an FET (Field Effect Transistor) is employed as a variable resistance to cut in, by degrees, one of the T feedback circuits. The effective resistance of the FET and thus the band-pass of the amplifier are varied by a capacitive and resistive timing circuit that is controlled via a keying circuit from one or more keys or other player-operated controls, such as the manual keys of an electric organ.

3,569,604
ELECTRONIC MUSICAL INSTRUMENT DIODE KEYING WITH ISOLATION AND WAVE-SHAPING
Harold O. Schwartz; William V. Machanian; Robert D. Barry, and Richard E. Barbas, North Ionawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.
Filed May 12, 1965, Ser. No. 455,233
Int. Cl. G10h *1/02, 5/10*
U.S. Cl. 84—1.01 **31 Claims**

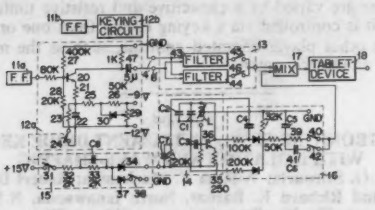


An electronic musical instrument, such as an organ, utilizing a plurality of constantly operating square wave generators, with the generators connected to utilization circuits by means of diodes which are normally biased off. Potential is switched selectively to the diodes upon closure of key switches to play the various tones. Diodes are shared in order that two diodes might be in series between each tone generator and utilization circuit for maximum isolation, while conserving the total number of diodes necessary. The diodes are supplied with potential through circuits which serve as integrating circuits for the square waves, whereby to round off the attack to produce or lead toward sawtooth wave shapes. Groups of diodes also are provided which are switched on simultaneously, and are connected to the previously mentioned diodes for playing preselected groups of notes simultaneously to simulate a chimes effect.

3,569,605
PLURAL CHANNEL TONE COLORING SYSTEM WITH COMMON MIXER FOR ELECTRONIC MUSICAL INSTRUMENT
Takeshi Adachi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Jan. 14, 1969, Ser. No. 791,088
Claims priority, application Japan, Jan. 18, 1968, 2793
Int. Cl. G10b *1/06*
U.S. Cl. 84—1.22 **6 Claims**

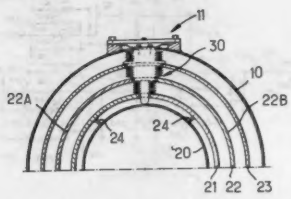
A tone coloring system for an electronic musical instrument simulates an accordion or harmonica sound, which consists in mixing a fundamental tone signal emitted from an accurately tuned first tone generating circuit and having the tone colors of string voice or reed voice with a signal ob-

tained from a second tone generating circuit which has a frequency difference of 3 to 10 Hz. as compared with the fundamental tone signal, a voltage corresponding to 3 to 6db. lower than that of said fundamental signal and is capable of



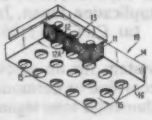
producing the tone color of the like voice as represented by said fundamental tone signal and using these mixed signals as the musical tone signals of an electronic musical instrument to be played.

3,569,606
ELECTRICAL CONNECTING DEVICE
Michel Clin, Rueil Malmaison (Hauts De Seine), France, assignor to L'Electro Entreprise, S.A., Paris, France
Filed Oct. 7, 1968, Ser. No. 765,312
Claims priority, application France, Oct. 19, 1967, 125 023
Int. Cl. H01b *9/04*
U.S. Cl. 174—16 **25 Claims**



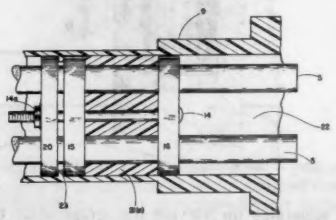
An electric power installation has connection between units such as an alternator and transformer, made by hollow, cylindrical phase conductors of different diameters which are coaxially aligned. The cylinders are enclosed by an outer sheath, the conductors and sheath being isolated from one another by a fluid insulant and held spaced apart by insulators having corrugated surfaces to provide long leakage paths. Each insulator extends between the sheath and inner conductor and is withdrawable through a port in the sheath. The conductors are in joined sections which may include expansion joints.

3,569,607
RESOLDERABLE CONNECTOR
John E. Martyak, Beacon; Morton D. Reeber, Shrub Oak, and Charles Wurms, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,836
Int. Cl. H05k *1/18, 3/32*
U.S. Cl. 174—68.5 **20 Claims**



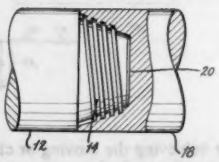
This patent discloses a resolderable connector particularly adapted for interconnecting multilayer modules with circuit boards and the like, but not limited thereto, the multilayer modules including a monolithic ceramic body with interconnected electrical conductors bonded to the ceramic. The modules include conductive terminations on at least one of the external surfaces of the ceramic body. Connected to these external conductive terminations are cuplike receptacles having a good solder wettable interior and a poor solder wettable exterior, the cuplike receptacles being connected to the conductive terminations as by brazing, but at any rate by a means having a higher melting temperature than conventional lead-tin solder so that bringing the receptacles to a temperature to heat the solder so that they may receive pins from projecting circuit boards does not cause release of the receptacles from the ceramic body.

3,569,608
SPLICE CASE ASSEMBLY
Louis Ance, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.
Filed Sept. 3, 1968, Ser. No. 757,047
Int. Cl. H02g *15/08*
U.S. Cl. 174—93 **20 Claims**



Disclosed herein is a cable splice assembly in which a stripped end portion of the cable is enclosed in a plastic domelike container, said domelike container being in sealing engagement by means of a first type seal with a sealing chamber. This sealing chamber encloses not only the unstripped portion of said cable but also a plasticlike substance within a closed space to form a second type seal. Provisions are made for producing compressive forces on such plasticlike substance, to drive it thoroughly into engagement with the unstripped cable surfaces as well as the interior surfaces of the sealing chamber that encloses such plasticlike substance so as to produce a tight and gasproof seal of a second type against the unstripped cable surface and the inner surface of the sealing chamber enclosure. By means of such a two seal assembly, ready access can thus be had to the stripped cable portion through said first seal means without breaking the last mentioned seal.

3,569,609
ELECTRODE JOINT
Timothy J. Fowler, Webster Groves, and Donald R. Frikken, Hazelwood, Mo., assignors to Monsanto Company, St.Louis, Mo.
Filed July 14, 1969, Ser. No. 841,631
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 **1 Claim**



Electrode joints comprising a resilient, conductive gasket, compressed between the apex of a tapered, threaded pin and the bottom of a tapered, threaded socket in an electrode

member have improved electrical conductivity and greater freedom from thermally induced stresses.

3,569,610
ETHYLENE-PROPYLENE RUBBER INSULATED CABLE WITH CROSS-LINKED POLYETHYLENE STRAND SHIELDING

Oscar G. Garner, Riverside, Conn.; George S. Eager, Jr., Upper Montclair, N.J., and Louis A. Bopp, Fair Haven, N.J., assignors to General Cable Corporation, New York, N.Y.

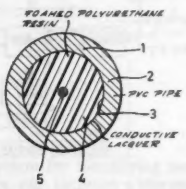
Filed Oct. 15, 1969, Ser. No. 866,611
Int. Cl. H01b *11/06*
U.S. Cl. 174—102 **10 Claims**

A high-tension cable is made with a strand shield of cross-linked, conductive polyethylene compound and with insulation that is a proprietary compound of ethylene-propylene rubber. The insulation is approximately 48 percent ethylene-propylene amorphous copolymer; approximately 12 percent crystalline polyethylene homopolymer; and reinforcing fillers to provide adequate physical properties. The shield and insulation are extruded and cured simultaneously to obtain void-free bonding.

3,569,611
HIGH VOLTAGE LINE

Werner Berends, Hamburg, Germany, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1968, Ser. No. 784,630
Claims priority, application Germany, Jan. 13, 1968, M76,911
Int. Cl. H01b *7/18*
U.S. Cl. 174—107 **8 Claims**



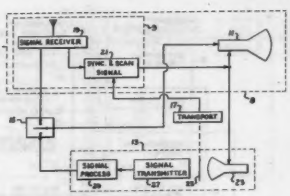
A high voltage cable comprising an insulating pipe coated on its inner surface with a conductive layer of lacquer. An inner conductor is coaxially mounted in the pipe and is supported within a core of nondeformable synthetic resin foam that fills the pipe. The inner conductor is conductively connected to the conductive layer of lacquer.

3,569,612
COLOR IMAGE DISPLAY SYSTEM

Donald John Cross, Tonawanda; Charles Bailey Neal; William Daniel Schuster, and Benton Boyd Scott, Batavia, N.Y., assignors to Sylvania Electric Products Inc.

Filed Dec. 30, 1968, Ser. No. 787,963
Int. Cl. H04n *9/44*
U.S. Cl. 178—5.2 **15 Claims**

A system for providing a color image display derived from color television signals and photographic film includes a color image reproducer; first signal source means responsive to color television signals to provide signals representative of luminance, chrominance and synchronizing information; second signal source means responsive to light-scanned photographic film to provide signals representative of luminance and chrominance information; transport means for effecting conveyance of a film through said second signal source means and synchronization of said film conveyance

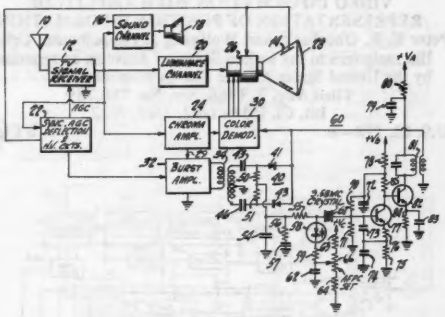


and said first signal source means; and switching means for selective coupling of signals representative of luminance and chrominance information from said first and second signal source means to said color image reproducer.

3,569,613
COLOR SUBCARRIER OSCILLATORS

John M. Kresock, Fort Wayne, Ind., assignor to RCA Corporation

Filed May 22, 1968, Ser. No. 731,164
Int. Cl. H04n *9/46*
U.S. Cl. 178—5.4 **11 Claims**



A color subcarrier oscillator for a television receiver uses a transistor and a feedback network which serves to maintain oscillations in the transistor. The network is selected to provide a feedback signal of a magnitude sufficient to cause the transistor to cease conduction for a portion of a cycle at the frequency of oscillation and further serves to substantially eliminate transistor impedance variations from effecting the frequency of oscillation. In this manner the frequency is determined by a resonant circuit comprising a piezoelectric crystal and a variable reactance device. A transistor output stage operated in a class B mode receives both AC and DC bias from the collector electrode of the oscillator transistor. A high-Q tank in the collector of the class B stage converts current variations therein to sinusoidal voltage fluctuations which are monitored by a phase detector together with the color bursts to provide a control voltage used to synchronize the transistor oscillator via the variable reactance device.

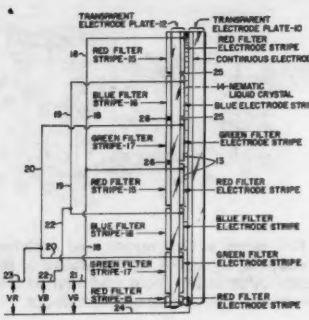
3,569,614
LIQUID CRYSTAL COLOR MODULATOR FOR ELECTRONIC IMAGING SYSTEMS

Thomas F. Hanlon, 337 Tremont Ave., Fort Lee, N.J.

Filed Apr. 10, 1969, Ser. No. 814,941
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 **6 Claims**

This invention utilizes the principle that a nematic liquid crystal, which is normally clear and transparent, is darkened upon application of a voltage thereto and can be darkened sufficiently to prevent light from passing therethrough. In a

three color system, the instant color modulator blocks out two unselected colors by applying voltage to the liquid



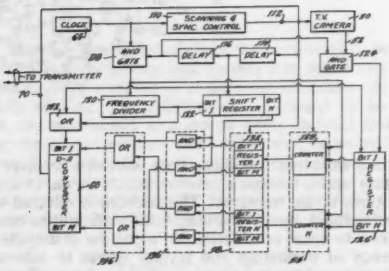
crystal behind the unselected color filters thus permitting the selected color to pass through the transparent liquid crystal behind its filter.

3,569,615

METHOD AND APPARATUS FOR TRANSMITTING VIDEO INFORMATION WITH AMPLITUDE REPRESENTATION OF POSITION INFORMATION

Peter E. R. Oberbeck, and Wolfgang J. Poppelbaum, Urbana, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 7, 1968, Ser. No. 750,789
Int. Cl. H04n *1/02, 1/40, 7/12*
U.S. Cl. 178—6 **6 Claims**



An encoding method and apparatus for transmitting sequences of video pulses produced by a television camera scanning graphic information of limited complexity, such as a line drawing, over a transmission medium having limited bandwidth, include encoding the time interval between video pulses into a voltage level having a predetermined time duration and having an amplitude proportional to the time interval between video pulses, transmitting the voltage levels, and decoding the voltage levels into the original sequence of video pulses.

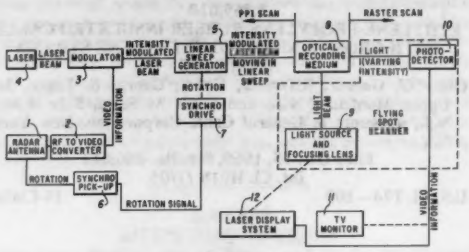
3,569,616

HIGH RESOLUTION PPI SCAN CONVERTER

Charles E. Baker, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 29, 1967, Ser. No. 649,916
Int. Cl. H04n *5/02*
U.S. Cl. 178—6.8 **4 Claims**

A scan conversion system is disclosed in which a modulated laser beam "writes" an image on an optical-recording medium using one type of scan pattern and the image is



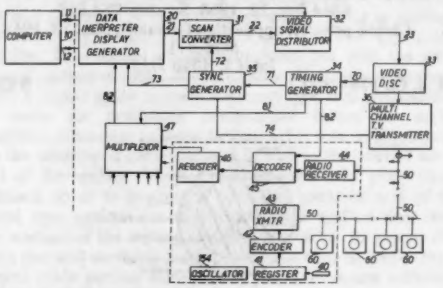
"read" by a flying spot scanner or similar device operating on a different scan pattern.

3,569,617

GRAPHIC DISPLAY FACILITY FOR COMPUTING

Murray W. Allen, Sydney, New South Wales (c/o School of Electrical Engineering, University of New South Wales, Baker Street Kensington, N.S.W. 2033); Malcolm Macaulay, (12 Jackson Street, Campbell, A.C.T. 2601), Canberra, and Gordon A. Rose, Brisbae, Queensland, Australia (c/o Department of Computer Science, University of Queensland, St. Lucia, Brisbane, Qld. 4067)

Filed Apr. 2, 1969, Ser. No. 812,752
Claims priority, application Australia, Apr. 5, 1968, 36073/68
Int. Cl. G09f *9/32;* **H04n** *7/10, 7/18*
U.S. Cl. 178—6 **1 Claim**



A graphic display facility for computing adapted to be connected to a computer wherein the input and output is effected and received by means of an ordinary television receiver used in connection with a light pen, there being a plurality of such television receivers and timing and synchronizing means in the system whereby each of the TV receivers may be used at will by a user to communicate with the computer.

3,569,618

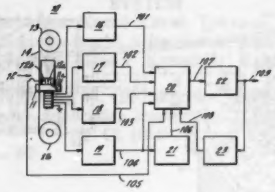
SWITCHING DEVICE FOR MAGNETIC RECORDING/REPRODUCING APPARATUS

Masao Inaba, and Harunobu Nakamura, Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 31, 1967, Ser. No. 679,322
Claims priority, application Japan, Nov. 4, 1966, 72,979
Int. Cl. H04n *1/38, 5/44, 5/78*
U.S. Cl. 178—6.6 **7 Claims**

The disclosure broadly teaches a switching device for rotary recording/reproducing systems preferably of the magnetic tape variety wherein signals picked up by the multiple rotating heads are composed by switching means into a continuous composite signal. Conventional switching apparatus of the alternating black-white ring and accompanying

photocell reading assembly is employed for initially composing signals from selected heads into a partial composite signal. The partial composite signals are then composed into a final continuous composite signal by use of wave envelope



detecting means for detecting the envelope of any one of the signals reproduced by the read heads and forming shaped pulses or combining the initially composed signals into a final composite continuous signal in a very high precision manner.

3,569,619

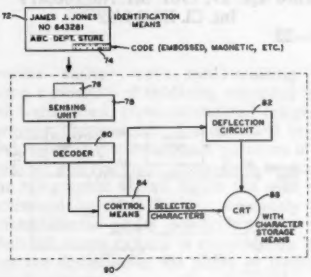
VERIFICATION SYSTEM USING CODED IDENTIFYING AND STORAGE MEANS

Luther G. Simjian, Laurel Lane, Greenwich, Conn. 06830

Filed June 27, 1968, Ser. No. 740,666

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **3 Claims**



A verification system for identifying means such as credit cards, charge plates, etc. includes a storage means storing an image of the rightful possessor of such card or characters from which such an image can be reproduced. Responsive to the presentation of such a card and insertion thereof in a sensing means, a display device coupled to the storage means provides a display of a respective image. A clerk is able to compare the appearance of the card bearer with the display and thereby verify whether the bearer and the identifying means are in agreement or whether submission of additional evidence is required.

3,569,620

AUTOMATIC VIDEO SIGNAL GAIN CONTROLLING APPARATUS

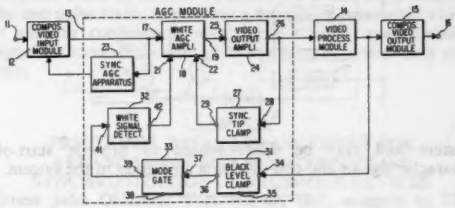
Leonard J. Baun, Cinnaminson, N.J., assignor to RCA Corporation

Filed Mar. 21, 1969, Ser. No. 809,248

Int. Cl. H04n *5/56*

U.S. Cl. 178—7.3 **14 Claims**

The synchronizing pulse components of a composite video signal are maintained at a desired level at the output of a video amplifier by means of a first automatic gain control (AGC) system associated with the video amplifier. The video amplifier output is further processed by means of an automatic video signal gain-controlling apparatus which maintains peak white video signal levels in substantially fixed relationship with respect to black level video signals substantially



independently of average brightness of the image represented by the video signals.

3,569,621

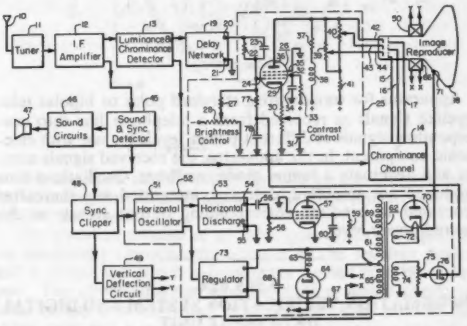
TELEVISION RECEIVER CONTROL CIRCUIT

Robert W. Krug, Janesville, Wis., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 29, 1968, Ser. No. 780,053

Int. Cl. H04n *3/18*

U.S. Cl. 178—7.5 **7 Claims**



A control circuit for preventing the application of accelerating potential in excess of a predetermined maximum value to the cathode-ray picture tube of a television receiver. Positive polarity pulses are amplitude related to the applied accelerating potential derived from the receiver horizontal deflection system and impressed on a neon bulb. When these pulses exceed a predetermined amplitude corresponding to the predetermined maximum value of accelerating potential, the bulb fires and causes a positive bias to be impressed on the control grid of the receiver luminance amplifier. This increases the beam current in the cathode-ray tube, heavily loading down the power supply and preventing the accelerating potential from remaining at an excessive level.

3,569,622

SIGNALLING CIRCUIT FOR INDICATING THE PRESENCE OF INFORMATION

Carl M. Mengani, Brooklyn, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

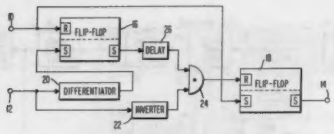
Filed June 24, 1964, Ser. No. 377,698

Int. Cl. G06k *9/00*

U.S. Cl. 178—7.7 **4 Claims**

A signalling circuit for indicating the beginning and end of symbol information in a character recognition system including a flip-flop which is set by the presence of the symbol information signals to provide an output control signal and is reset by the first retrace signal in the system after the infor-

mation signals have terminated. This output signal indicates the time during which symbol information is present in the



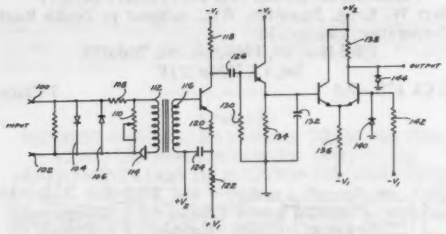
system and may be differentiated to provide start-of-character signals and end-of-character signals in the system.

3,569,623

ELECTRONIC SIGNAL CONVERTER

John P. Schnitzius, Cherry Hill, N.J., assignor to Ultronic Systems Corporation

Filed Nov. 25, 1968, Ser. No. 778,677
Int. Cl. H04l *15/24*
U.S. Cl. 178—17 **2 Claims**



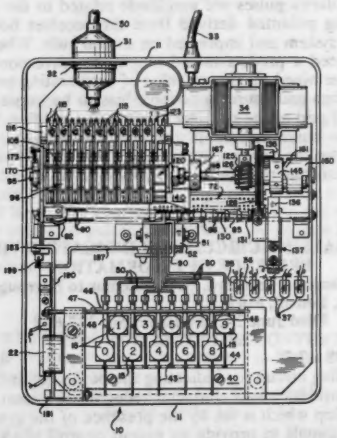
Apparatus for transforming standard polar or bipolar teletypelike signals as received from a telephone line into corresponding signals at different power levels for use with electronic equipment. In the apparatus, the received signals actuate and deactuate a tunnel diode oscillator. Oscillations thus produced are amplified, detected, integrated and thereafter processed to produce corresponding output signals at the desired power level.

3,569,624

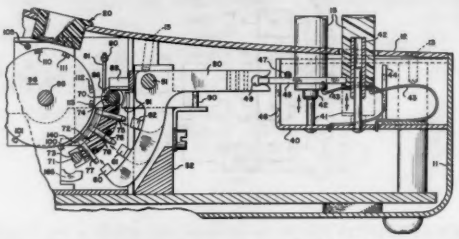
INFORMATION VERIFICATION SYSTEM AND DIGITAL DATA INPUT UNIT

Robert H. Twyford, Falls Church, Va., assignor to Ultronic Systems Corporation

Filed Mar. 25, 1968, Ser. No. 721,543
Int. Cl. H04l *13/08*
U.S. Cl. 178—17.5 **23 Claims**



An inquiry unit for use with an information checking system adapted to receive by manual insertion a multidigit number, to visually display the number and to mechanically store the number. A manually operated sending key releases



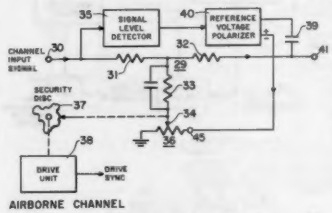
the stored number for processing and clears the unit to return same to normal standby to receive the next multidigit number.

3,569,625

TELEMETRY DATA TRANSMISSION SYSTEM

T. Burr Jackson, Riverside, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 27, 1961, Ser. No. 106,419
Int. Cl. H04l *9/02*
U.S. Cl. 178—22 **2 Claims**



In a data transmission system the combination comprising:

a. a signal source representing a measured quantity;

b. a reversible polarity DC power supply;

c. a potentiometer connected to said reversible polarity DC power supply;

d. coded disc means operatively associated with the movable tap of said potentiometer for providing a predetermined reference voltage;

e. adding circuit means having a first input coupled to said signal source and a second input coupled to the movable tap of said potentiometer for adding said signal representing a measured quantity and the predetermined varying reference voltage;

f. signal level detector means coupled to said signal source and to said reversible polarity DC power supply for reversing the polarity of said power supply when said signal source is of a predetermined value;

g. means coupled to said adding circuit means for transmitting said combined signal to a receiving station;

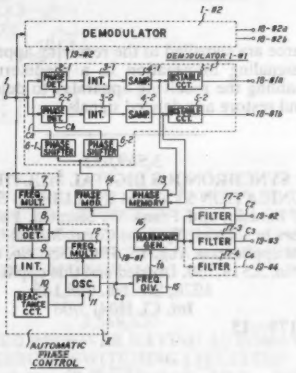
h. means located at said receiving station for detecting the polarity and subtracting a voltage identical to said predetermined varying reference voltage from said transmittal signal; and

i. circuit means coupled to said subtracting means for utilizing the remaining portion of said transmittal signal.

3,569,626
REFERENCE CARRIER WAVE SYNCHRONIZING SYSTEM

Hisakichi Michishita; Kazuo Kawai, Tokyo-to, and Sotokichi Shintani, Fukuoka-machi, Saitama-ken, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed July 28, 1967, Ser. No. 656,840
Claims priority, application Japan, Aug. 1, 1966, 41-50109
Int. Cl. H04l *27/24*
U.S. Cl. 178—67 **7 Claims**

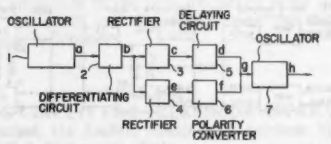


A reference carrier wave synchronizing system for synchronizing a plurality of receiving reference waves with a plurality of transmitted, phase-modulated telegraphic waves having harmonic frequencies of a standard low frequency and each assuming 2^n quantum phase positions in accordance with the number n of telegraph channels to be transmitted on each of the telegraphic waves; where the said synchronization is performed by compensating separately the fluctuations of instantaneous phase positions of the transmitted, phase-modulated waves caused in transmission medium and caused from the deviation in the phase or frequency of the standard low frequency.

3,569,627
TELEVISION VERTICAL SYNCHRONIZING SIGNAL GENERATOR

Takeshi Nishimura, Kodaira-shi; Tadaiku Yoneda, Kokubunji-shi, and Kan Otake, Tanashi-shi, Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho and Hitachi Denshi Kabushiki Kaisha, Tokyo-To, Japan

Filed July 18, 1967, Ser. No. 654,095
Claims priority, application Japan, July 20, 1966, 41/47037
Int. Cl. H04n *5/06*
U.S. Cl. 178—69.5 **5 Claims**

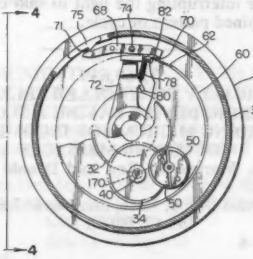


A generator having a generator for producing rectangular waves having a period equal to 2N times a television horizontal scanning period and a 50-percent duty factor, a pulse generating circuit for generating from the rectangular waves two pulse trains respectively of a period of 2NH mutually differing in phase by NH, a delaying circuit for delaying one of the pulse trains by H/2, and a circuit for additively combining the two pulse trains to produce a composite pulse train which is used in conjunction with the horizontal synchronizing signal to accomplish interlaced scanning of a television picture.

3,569,628
FRICTIONAL DRIVE ARRANGEMENT FOR ARRANGEMENT FOR EFFECTING PHASE SYNCHRONIZATION OF FACSIMILE DEVICES

Ernest John Oklesben, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 3, 1969, Ser. No. 803,701
Int. Cl. H04l *7/10*
U.S. Cl. 178—69.5 **6 Claims**



This invention relates to an improved clutch which is used for effecting synchronous phase operations between two facsimile transceivers.

The invention consists of an index gear which is coupled to an electrically operated drive motor in the receiver device and a clutch arm which is frictionally carried with the index gear. The clutch arm carries a pivotally mounted toggle or latch having a detent which is engageable with teeth of the index gear and a second detent which engages a key of a drum in the receiving facsimile device. Synchronization occurs when the detent of the latch engages a correct one of the gear teeth on the index wheel. Electrical signals are provided from the sending facsimile device to effect periodic disconnection of the detent with the teeth of the index gear and also to effect angular displacement of the clutch arm relatively to the index gear until the detent eventually engages the proper gear tooth of the index gear and thereafter the two transceivers operate in synchronous relation, the toggle maintaining a drive connection between the drum and index gear of the receiving unit at synchronized phase orientation of the receiving facsimile transceiver.

The present invention is most directly concerned with the means for obtaining the optimum frictional loading between the clutch arm and the index gear which will enable the electrically operated means to perform the necessary adjustments which will eventually achieve synchronization of the sending and receiving transceivers.

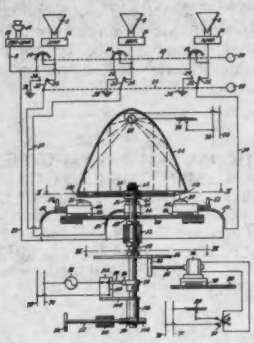
3,569,629
PLURAL LOUDSPEAKER SOUND EFFECT SYSTEM

David L. Beatty, 4832 Adams, Shawnee Mission, Kans.

Filed Apr. 1, 1969, Ser. No. 812,195
Int. Cl. H04r *5/04*
U.S. Cl. 179—1 **13 Claims**

A sound effect system comprising a plurality of loudspeakers adapted to be spaced about a stage or platform on which performers are positioned, or about a listening area, a single source of electrical audio signal for all of said

speakers, a photoresistive light cell in the source wire to each of said speakers, a light source directed at all of said cells,



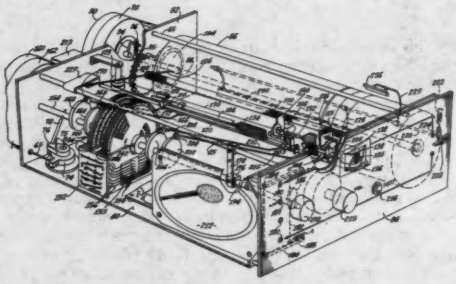
and means for interrupting the light to said cells in virtually any predetermined pattern or cycle.

3,569,630

CYCLICALLY CONTROLLED TELEPHONE ANSWERING DEVICE HAVING A SECTIONED RECORDING MEDIUM FOR INCOMING AND OUTGOING MESSAGES

Jerome Parks, Marina del Rey, and Donald D. Kane, Torrance, Calif.

Filed Dec. 9, 1966, Ser. No. 605,525
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 **8 Claims**



An electromechanical device for responding to the ringing of a telephone instrument by answering with a prerecorded message and then recording communications incoming over the telephone line. The device provides for manual control of the recording of the prerecorded message and the playback of the incoming communications as recorded.

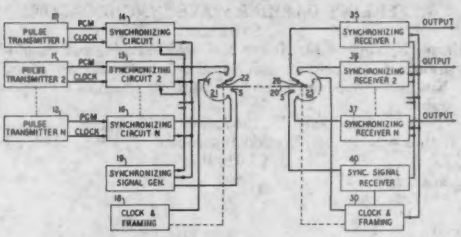
3,569,631

PCM NETWORK SYNCHRONIZATION

Virgil I. Johannes, Holmdel; John S. Mayo, Morris Township, and Richard H. McCullough, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 7, 1968, Ser. No. 727,241
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 **5 Claims**

Pulse signals from a plurality of unsynchronized sources are time-division multiplexed on a high-speed pulse transmission system having a pulse repetition rate submultiples of which are approximately equal to the repetition rate of the signals to be multiplexed. Multiplexing is accomplished by inserting control pulses or deleting pulse information from the pulse sources when necessary so as to maintain the pulse signals at a predetermined repetition rate equal to a submultiple of the line rate. The presence and location of the control pulses and the fact that deletion has occurred as well as whether a pulse or a space has been deleted from a particular



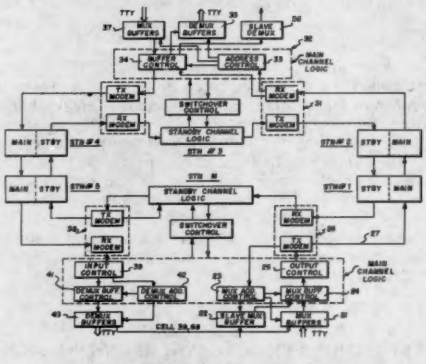
pulse source are signalled to the receiving apparatus by transmitting signaling information in a predetermined channel space enabling the receiving apparatus to delete the control signals and restore any deleted signals.

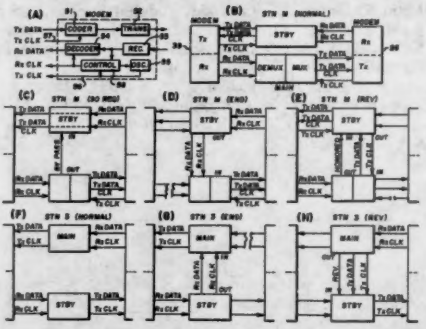
3,569,632

SYNCHRONOUS DIGITAL MULTIPLEX COMMUNICATION SYSTEM INCLUDING SWITCHOVER

Peter W. Beresin, and Frank W. Sieracki, Philadelphia, Pa., assignors to Ultronic Systems Corp., Mount Laurel, N.J.

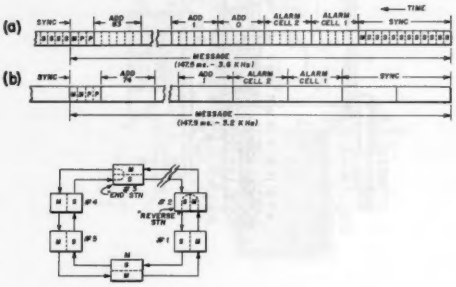
Original application Aug. 15, 1967, Ser. No. 660,696, now Patent No. 3,519,750. Divided and this application Jan. 16, 1970, Ser. No. 008,145
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 **2 Claims**





Multiplex messages are transmitted from a master station through a plurality of intermediate stations and back to the master via a main channel. A standby channel provides for transmission in the opposite direction. If a station detects received message failure in the main channel it initiates a switchover operation in which the preceding station switches

received messages to the standby channel. The switched messages pass back through the master to the initiating station, and the initiating station returns them to the master via the main channel. Modem clock signals are switched to maintain synchronous operation and failure of a modem



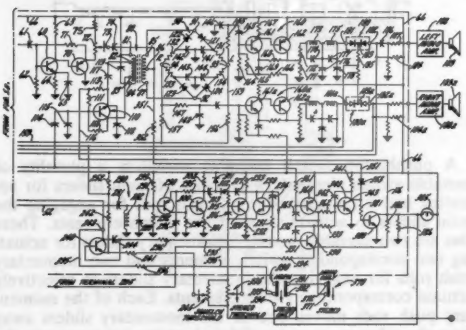
results in a switchover operation. Provision is made for operation alternatively at higher and lower bit transmission rates, while retaining the same message length. Special connections for predetermined message cells allow communication between intermediate stations.

3,569,633

FM STEREO RECEIVER HAVING AUTOMATIC THRESHOLD SWITCHING CIRCUITRY

Rodman S. Brahman, Berien Springs, Mich., assignor to Heath Company, St. Joseph, Mich.

Filed Dec. 21, 1967, Ser. No. 692,536
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 **11 Claims**



A FM stereo receiver circuit in which the reproduction is switched to the monophonic mode or cutoff entirely depending upon the amplitude of the high frequency noise superimposed upon the signal and depending upon the degree to which the signal is detuned.

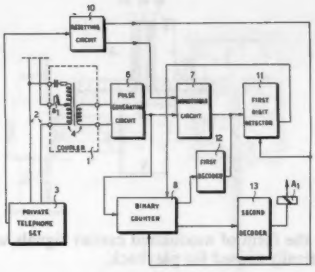
3,569,634

BLOCKING CIRCUIT FOR TELEPHONE APPARATUS

Claudio Amadasi, via Asellia, Milan, and Adriano Maj, via Mazzucchelli 3, Morazzone, Italy

Filed June 19, 1968, Ser. No. 738,172
Claims priority, application Italy, June 27, 1967, 52244A/67
Int. Cl. H04m *3/38*
U.S. Cl. 179—18 **5 Claims**

A telephone circuit which prevents unauthorized long-distance calls by disconnecting the line with the telephone exchange by means of a pulse counter and a series switch



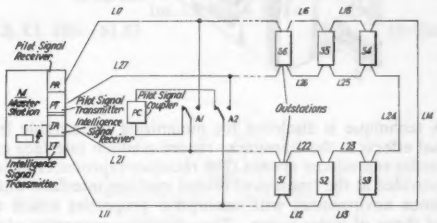
combination operating in response to the pulses given by the first dialed number.

3,569,635

A TELECOMMUNICATION SYSTEM WITH MEANS FOR DETECTING FAULTS AND REROUTING SIGNALS TO THE FAULT LOCATIONS

Cyril Ettienne Bloch, London, and Victor Teacher, Enfield, England, assignors to International Standard Electric Corporation

Filed Oct. 10, 1967, Ser. No. 674,304
Claims priority, application Great Britain, Oct. 28, 1966, 48370/66
Int. Cl. H04q *9/02*
U.S. Cl. 179—18 **11 Claims**



A telecommunications system includes a master station which is in communication with any one of a number of outstations via one or the other leg of the two legs of a closed loop cable linking all the outstations along the cable route. A pilot tone is transmitted around the loop (which may be a four-wire telephone circuit) to indicate the occurrence of a fault and simultaneously to initiate switching operations to switch outstations beyond the fault to a healthy leg and isolate the faulty section of the line.

3,569,636

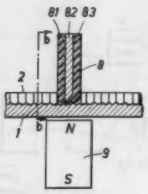
RECORDING AT LEAST TWO SIGNAL CHANNELS IN A COMMON GROOVE OF A MAGNETIC RECORD CARRIER

Eduard Schuller, Berlin, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Danube, Germany

Filed Feb. 6, 1968, Ser. No. 703,430
Claims priority, application Germany, Feb. 7, 1967, T 33155
Int. Cl. G11b *11/20*
U.S. Cl. 179—100.2 **3 Claims**

Method and means for recording two separate signal channels, pertaining, for example, to the video and audio informa-

tion of a television signal, in the walls of a recording carrier groove in the form of modulated carrier signals which are to be magnetically sensed for playback.

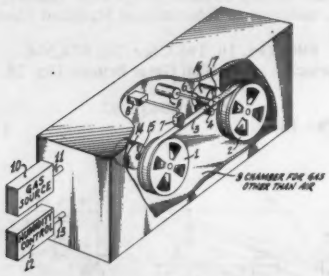


3,569,637

GAS ENVIRONMENT FOR RECORDER-REPRODUCER SYSTEMS

Harold Esten, Willingboro, N.J., assignor to RCA Corporation

Filed Oct. 14, 1968, Ser. No. 767,929
Int. Cl. G11b *5/00, 1/00, 5/10*
U.S. Cl. 179—100.2 **13 Claims**



A technique is disclosed for minimizing undesirable frictional effects at the transducer-record medium interface of a recorder-reproducer system. The recorder-reproducer system is provided at the transducer-record medium interface with a gaseous environment with adsorptive properties which exceed those of water vapor. The adsorptive properties of the gas result in a sufficient adsorption of the gas at the record medium to produce and sustain, upon desorption at the transducer-record medium interface, a friction reducing effect.

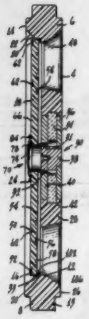
3,569,638

LOUDSPEAKER HAVING PLASTIC DIAPHRAGM WITH COMPLIANCE GROOVES

Herbert Schoengold, Mt. Vernon, N.Y., assignor to Electronic Research Associates, Inc., Cedar Grove, N.J.

Continuation-in-part of application Ser. No. 342,827, Feb. 24, 1965, now Patent No. 3,351,719. This application June 22, 1967, Ser. No. 648,089
Int. Cl. H04r *9/06*
U.S. Cl. 179—115.5 **7 Claims**

Sound reproducing equipment comprising a frame having a diaphragm supported at its peripheral edges by said frame. The frame and diaphragm are preferably formed of materials having acoustically compatible properties and the diaphragm is also preferably mounted on the frame in a manner to permit movement of the diaphragm as a complete entity at low frequencies. At the same time the diaphragm is provided with compliance grooves or corrugations containing a compliant material serving to reduce or eliminate "break-up" or the development of nodal points within the diaphragm. The diaphragm further may be provided with a high frequency propagator which cooperates with the diaphragm to increase the range of the vibrations produced by the equipment without introducing feedback or distortional characteristics during operation.

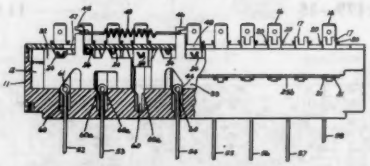


3,569,639

PUSHBUTTON SWITCH ASSEMBLY WITH MULTIPLE MOMENTARY ACTION

Steward A. Woodward, Stratford, Conn., assignor to General Electric Company

Filed Nov. 26, 1969, Ser. No. 880,005
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 **10 Claims**



A pushbutton switch assembly including a plurality of movable switch elements, a plurality of main sliders for actuating and a plurality of main push rods for engaging the main sliders to actuate some of the switch elements. There also are two movably mounted momentary sliders for actuating two corresponding switch elements and two momentary push rods for engaging the momentary sliders to selectively actuate corresponding switch elements. Each of the momentary push rods moves one of the momentary sliders away from the other momentary slider. A spring interconnects the momentary sliders to return each of them to its original position.

3,569,640

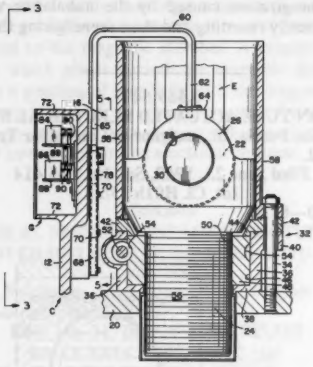
LIMIT SWITCH ASSEMBLY FOR PRESS SLIDE ADJUSTMENT

Robert G. Suntheimer, Hastings, Mich., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed June 9, 1969, Ser. No. 831,629
Int. Cl. H01h *21/28*
U.S. Cl. 200—47 **5 Claims**

A limit switch assembly for use in positioning a press slide. The press is of the type in which the slide is raised or lowered by means of one or more adjusting screws. Connected to one of the adjusting screws is a rack bracket having a rack end spaced from the screw and oriented generally parallel with

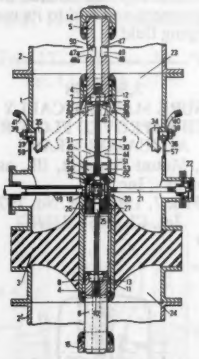
movement of the slide. The latter supports a pinion which engages the rack end and is rotated with movement of the slide relative the adjusting screw. Rotatable with the pinion is a cam which engages one of two limit switches.



3,569,641
METAL-CLAD ISOLATOR SWITCHES COMPRISING EARTHING DEVICES

Rintje Boersma, Harmelen, and Gijsbert W. Irik, Bilthoven, Netherlands, assignors to N.V. "COQ", Kanaalweg, Netherlands

Filed Oct. 20, 1969, Ser. No. 867,745
Claims priority, application Netherlands, Jan. 3, 1969, 6900061
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 **8 Claims**



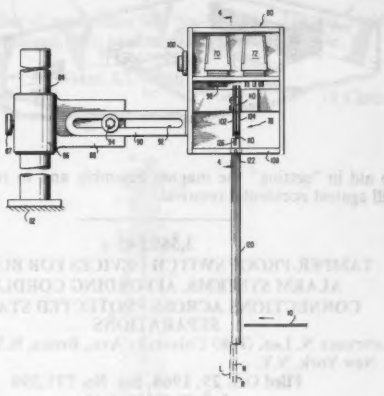
A metal-clad isolator switch for high voltage, comprising fixed contacts, movable switching contacts cooperating with said fixed contacts and at least one earthing switch, of which the fixed contact is attached to the envelope of the isolator switch and the movable contact is carried by the holder of the movable switching contacts of the isolator switch, said movable earthing contact being directly mechanically driven and directly mechanically locked in either end position by a movable switching contact of the isolator switch.

3,569,642
CONTROL FOR SHEET FEEDING APPARATUS

William B. Grover, Rte. 1, Box 25 XB, Sumter, S.C.

Filed Jan. 26, 1968, Ser. No. 700,867
Int. Cl. H01h *9/02*
U.S. Cl. 200—61.13 **8 Claims**

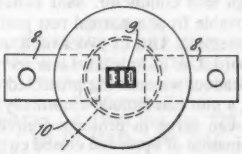
In a conveyor for feeding sheet material of variable width, a control mechanism for automatically adjusting the conveyor laterally of the sheet in accordance with the width of the sheet. The control mechanism includes an arm engageable with the edge of the sheet to sense its width, a motor for laterally adjusting the conveyor towards or away from the sheet, and a switch mechanism including relays actuated by the control arm for energizing the motor.



3,569,643
INERTIA SWITCH HAVING RELEASABLE LATCH MEANS

Walter Wilson Hugh Clarke, and Terence Alexander Riley, 17, Hey Houses Lane, Surrey, England, assignors to C. B. Associates Limited, London, England

Filed Sept. 2, 1969, Ser. No. 854,377
Claims priority, application Great Britain, Sept. 3, 1968, Nov. 19, 1968, 41796/68;54919/68
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.53 **10 Claims**



The invention provides an inertia switching device defining a seating, an operating mass of magnetic material normally retained in the seating by means of a magnet positioned adjacent the seating and an actuating member slidably mounted within the housing and displaceable from a first to a second position by the magnetic-operating mass upon dislodgement thereof from the seating upon application of an external perturbation to make or break an electrical circuit, and means mounted on or adjacent the actuating member and coacting with the housing to maintain said member in its second position.

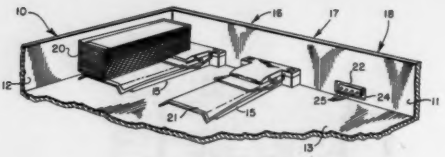
3,569,644
BILL TRAP

Richard D. Brugger, and Neal B. Fourspring, Erie, Pa., assignors to Elgin Electronics, Inc., Waterford, Pa.

Filed July 14, 1969, Ser. No. 841,379
Int. Cl. G08b *21/00;* **H01j** *39/12*
U.S. Cl. 200—61.61 **6 Claims**

A device for detecting the removal of the last bill in a stack of paper currency for signalling or alarm purposes consisting of a magnet assembly supported in a "set" position by the last bill, which drops under the influence of gravity upon removal of the bill, to a position adjacent a pair of reed

switches, causing their actuation and closure of electrical circuits. In one embodiment a double torsion spring is utilized



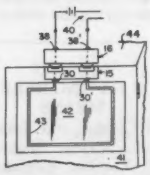
to aid in "setting" the magnet assembly and to restrain the bill against accidental removal.

3,569,645

TAMPER-PROOF SWITCH DEVICES FOR BURGLAR ALARM SYSTEMS, AFFORDING CORDLESS CONNECTIONS ACROSS PROTECTED STATION SEPARATIONS

Lawrence N. Lea, (1683 University Ave., Bronx, N.Y. 10053), New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,390
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.62 2 Claims



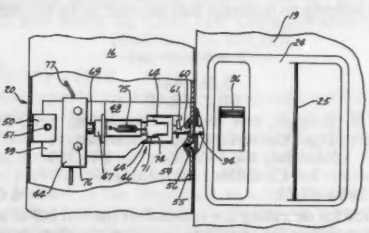
The fundamental switch unit interposed in a conductor included in the circuit, comprises a permanent magnet carried for example on a door, and an armature carried on a door frame, so when the door is closed, the magnet attracts the armature thereto into contact therewith, thus providing a current path through said conductor. Said switch components are relatively movable from a normal rest position, independent of door movement. Use of two switch units eliminates need of a door cord. Use of four units can serve to break the lead-in and the leadout wires at the protected opening. With a small addition, a unit can include a normally closed switch, which assembly can serve in protective circuits which are either or a combination of open and closed circuit systems.

3,569,646

LID LATCH AND SWITCH OPERATING MECHANISM

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Aug. 4, 1969, Ser. No. 847,202
Int. Cl. H01h *3/20*
U.S. Cl. 200—61.68 12 Claims



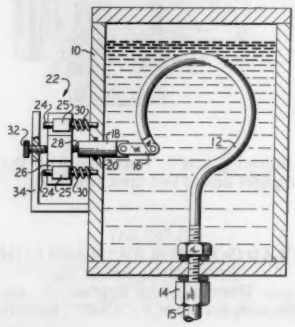
A control mechanism for a laundry machine includes a switch device responsive to the unlatching of a lid-mounted lid latch or to excessive unbalance vibrations for deenergizing the laundry machine. The control mechanism is further operable, upon unlatching and relatching of the lid latch following deenergization caused by the unbalance vibrations, for automatically resetting and then reenergizing the laundry machine.

3,569,647

BOURDON TUBE ACTUATED ELECTRICAL SWITCH

Jozef Kiwalle, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 23, 1969, Ser. No. 835,414
Int. Cl. H01h *35/36*
U.S. Cl. 200—81.8 3 Claims



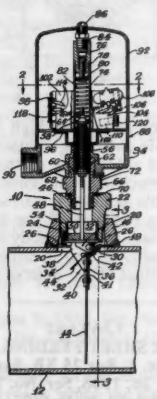
A Bourdon tube connected with a microswitch for closing it upon the event of predetermined pressure in a fluid circuit with which the tube is associated. The tube is contained in a liquid tight housing and immersed in a damping fluid to prevent actuation by momentary pressure variations. The switch is adjustable and disposed outside the housing to permit convenient adjustment and add to its useful life by isolating it from the damping fluid.

3,569,648

FLUID PRESSURE MAGNETICALLY OPERATED SWITCH WITH IMPROVED FLOW-RESPONSIVE ACTUATOR MEANS

Roy W. De Meyer, Mount Prospect, Ill., assignor to Schaub Engineering Company, Inc.

Filed Feb. 7, 1969, Ser. No. 797,410
Int. Cl. H01h *35/40*
U.S. Cl. 200—81.9 5 Claims



A flow-switch assembly for use in connection with a substantially horizontally disposed fluid-carrying line. The as-

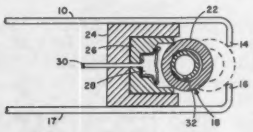
sembly includes a bushing for mounting the assembly on the line. A vane is pivotally carried by the bushing and, under no-flow conditions in the line, it normally extends vertically into the line. A magnetic member is vertically slidable in a housing mounted on the bushing. A cam is provided on the vane and a cam follower responsive to movement of the cam is connected to the magnetic member. A magnet is carried on an arm which pivots towards the magnetic member as it moves into a position of proximity with the magnet, after the cam follower is moved to a raised position by the cam. A mercury-type switch is responsive to the movement of the magnet for opening or closing electrical contacts.

3,569,649

ELECTRICAL SWITCH CONTACT STRUCTURE WITH IMPROVED INFLATABLE BLADDER ACTUATING MEANS

Arnold A. Spielbauer, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Jan. 31, 1969, Ser. No. 795,559
Int. Cl. H01h *15/00, 35/40, 1/00*
U.S. Cl. 200—83 **3 Claims**



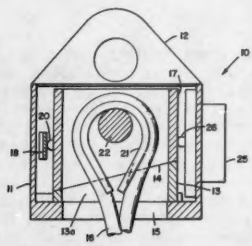
An electrical switch for large amperage currents including R.F. currents, which includes first and second contacts and a shorting means comprising a plurality of disks.

3,569,650

LOAD LIMIT SWITCH

Robert E. Chubbuck, 10902 S. Shoemaker Ave., Santa Fe Springs, Calif.

Filed Feb. 17, 1969, Ser. No. 799,854
Int. Cl. H01h *13/16*
U.S. Cl. 200—85 **10 Claims**



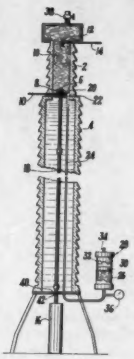
A load limit switch for interposition between lifting machinery and a suspended cable including a housing connected to the lifting machinery, an inclined plane rigidly mounted in the housing, and a block slidably positioned on the inclined plane within the housing. The block includes means for suspending therefrom the cable for supporting weights, and a biasing spring is positioned between the housing and block, biasing the block with a preselected force at a position on the inclined plane. When the weight on a cable suspended from the block exceeds a predetermined level, the lateral component of force from the block overcomes the biasing spring force. The block translates on the inclined plane and activates a switch opening an electrical circuit which controls the lifting machinery.

3,569,651

CIRCUIT BREAKER HAVING PRESSURIZED LIQUIFIED GAS CONTINUOUSLY MAINTAINED ABOVE INSTANTANEOUS VAPOR PRESSURE

Jean Louis Gratzmuller, Neuilly-sur-Seine, Hauts-de-Seine, France

Continuation of application Ser. No. 521,852, Jan. 20, 1966, now abandoned. This application Oct. 20, 1969, Ser. No. 867,959
Int. Cl. H01h *33/68*
U.S. Cl. 200—148 **11 Claims**



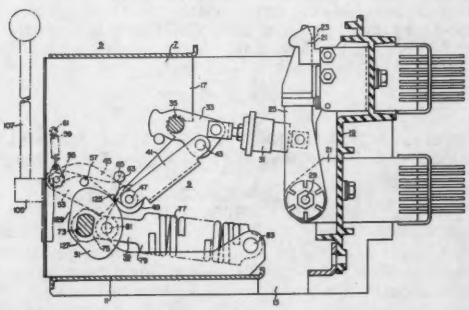
A circuit breaker having a circuit interrupting chamber containing a liquefied dielectric gas with a fixed contact member disposed so as to lie in the liquefied gas and a movable contact member disposed in the chamber so as to have its contact making surface within the liquefied gas for all of its positions relative to the fixed contact, and having means, such as a hydraulic accumulator or a compressed gas compartment communicating with the circuit interrupting chamber; i.e., other than the gaseous phase of the liquefied dielectric gas for continuously maintaining the liquid pressure above the critical pressure of the dielectric gas.

3,569,652

CAM OPERATED CIRCUIT BREAKER WITH SINGLE STROKE MANUAL SPRING CHARGING MEANS

Richard Hauser, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

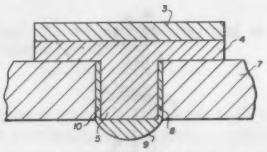
Filed Oct. 24, 1968, Ser. No. 770,295
Int. Cl. H01h *3/30, 3/42*
U.S. Cl. 200—153 **10 Claims**



A circuit breaker comprises improved means for manually operating the breaker from the open position to the closed position. The circuit breaker comprises a spring-closing mechanism, and interlock means is provided to prevent

operation of the spring-closing mechanism when the contacts are in the closed position.

3,569,653
ELECTRICAL CONTACT AND CONTACT ASSEMBLY
John R. Cockshutt, Red Bank, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.
Filed Jan. 31, 1969, Ser. No. 795,476
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 3 Claims



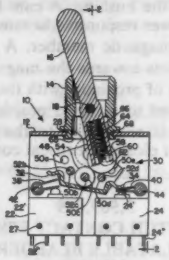
A contact assembly including a rivet type contact having a metal head and a metal shank with a portion of the shank at the free end thereof composed of a metal solder having a lower melting point than the metal of the head and the metal of the remaining portion of the shank. The shank of the contact passing through an aperture of a support arm and staked into an abutment relationship therewith. A portion of the solder from the staked portion extending into the aperture of the arm between the shank and the aperture wall forming a solder joint therebetween.

3,569,654
CONTACT BUS BAR
Shinichi Murakami, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Sept. 4, 1969, Ser. No. 855,165
Claims priority, application Japan, Sept. 13, 1968, Utility Model 79153/68
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 4 Claims

A contact bus bar utilized as a common stationary contact element cooperating with a plurality of movable contact elements comprises an elongated body and a plurality of contacting chips disposed on the body lengthwise thereof at regular intervals in correspondence with the respective movable contact elements. Each of said chips is spot-welded to said body at positions apart from the contact point of the corresponding movable contact element.

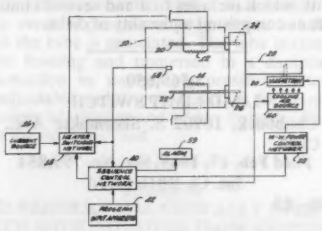
3,569,655
ROLLER ACTUATED SWITCH OPERATING ASSEMBLY
Alexander J. Jakubauskas, 8501 W. Higgins Road, Chicago, Ill. 60631
Filed Dec. 1, 1969, Ser. No. 881,048
Int. Cl. H01h *13/28*
U.S. Cl. 200—172 12 Claims

Actuator assembly for actuating a plurality of pushbutton switches from a single toggle lever having a roller mounted thereon includes a pivoted rocker member having switch-button-actuating portions on its ends and a pair of opposed side flanges which are pivotally mounted to a support. Each of the side flanges includes a series of five holes spaced in a curved path along its length and adapted to receive and support one or more rod or roller members which may engage the lever-mounted roller for nonteasable actuation of the switches. By selectively mounting rods in one or more sets of opposed holes, the toggle lever can be alternatively caused to have nonteasable maintained contact at both ends of its movement, momentary contact at both ends, or maintained con-



tact at one end and momentary contact at the other. In addition, where the assembly is to provide a maintained contact at both ends of its movement, it can be assembled so as to have a center "off" position if desired.

3,569,656
AUTOMATIC COOKING CYCLE CONTROL SYSTEM FOR MICROWAVE OVENS
Edward A. White, Fort Wayne, Ind., and Arthur Parnes, Tarzana, Calif., assignors to Bowmar Tic, Inc., Newbury Park, Calif.
Filed July 24, 1969, Ser. No. 844,364
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 8 Claims

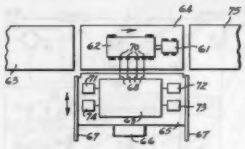


A microwave oven is shown with a pair of antenna elements in the oven cavity for radiating microwave energy throughout the cavity. In different embodiments, the cavity is thermally heated via separate heaters and via the antenna elements. Programming controls establish predetermined cycles for microwave energy and thermal heat, and a control network selectively operates the magnetron and one or both heaters in the sequence determined by the programming controls. Program input apparatus is illustrated which includes pushbuttons and a card data reader for selecting different programs, and sequence control networks with timing and relay networks are illustrated for automatically cycling the microwave energy and thermal heating on and off for each program selected.

3,569,657
METHOD OF PROCESSING AND TRANSPORTING ARTICLES
Melvin L. Levinson, 1 Meinzer St., Avenel, N.J.
Continuation-in-part of application Ser. No. 497,851, Oct. 19, 1965, now Patent No. 3,469,053. This application Sept. 16, 1969, Ser. No. 858,462
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 14 Claims

A method of processing and transporting articles from a first location to a second location, the articles being initially loaded in a movable transport vehicle, such as a tractor trailer, having a body portion which includes a microwave

oven and an access opening capable of receiving microwave energy therethrough. The vehicle is transported to at least one microwave energy station whereat at least microwave energy is emitted through the access opening to heat the articles and where equipment can be employed to monitor and control the processing. The vehicle is then moved from the microwave generator station to a second location whereat the body portion is either stored or the heated articles removed therefrom.

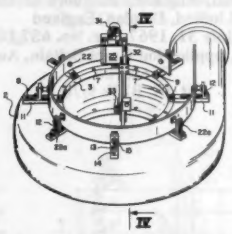


3,569,658

APPARATUS FOR APPLYING WELD METAL TO THE INTERIOR SURFACE OF A HOUSING FOR A DREDGE PUMP OR THE LIKE

Ralph E. Moore, Hattiesburg, Miss., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Apr. 9, 1968, Ser. No. 719,879
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **6 Claims**



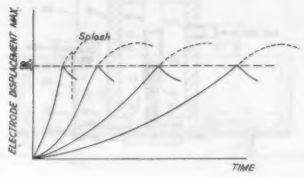
Apparatus for applying weld metal to the interior surface of a housing for a dredge pump or the like at least a portion of which is noncircularly curved comprising a guideway extending substantially parallel to the surface and welding means movable along the guideway and adapted during such movement to apply weld metal to the surface. Adjustable brackets are preferably provided for mounting the guideway whereby all increments of the length of the guideway may be disposed substantially equidistant from the respective corresponding increments of the length of the surface. The guideway is preferably flexible enabling it to be bent or sprung into position substantially parallel to the surface. The guideway preferably has spaced apart means such as openings therein for attachment of the brackets thereto. The brackets may be adjustable in a direction toward and away from the surface and also transversely of that direction. The housing has a side opening and the brackets are preferably mounted on the housing at the edge of the side opening. The housing has bolt holes at the edge of the side opening and the brackets are preferably bolted to the housing through the bolt holes. When weld metal is being applied to the interior surface of the housing the housing is preferably disposed in position lying on its side with the side facing upwardly open and with the welder stationed within the housing. The structure is such that the space over the welder's station is unobstructed affording the welder rapid and easy egress in the event of an emergency.

3,569,659

RESISTANCE WELDING

David B. Benton; Richard G. Newling, and Malcolm D. Hannah, Cambridge, England

Filed Apr. 7, 1969, Ser. No. 813,839
Claims priority, application Great Britain, Apr. 10, 1968, 17287/68
Int. Cl. B23k *9/10*
U.S. Cl. 219—117 **12 Claims**



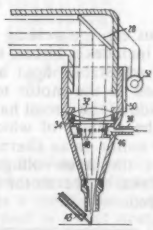
The progress of a resistance welding process is ascertained by reference to the expansion of the workpieces and to avoid the difficulty of accurately detecting the maximum expansion, in the region of which the expansion/time curve is flattened, a sensing device indicates when the expansion has a selected value between 60 percent and 90 percent of the maximum expansion which would result if the current were allowed to continue. The welding current is switched off at this time or a predetermined interval thereafter. Methods of increasing the size of the weld nugget are described, including reinitiating the flow of welding current after the workpieces have contracted to some extent, this further pulse of current being again terminated when the expansion reaches a selected value before the flattened portion of the expansion/time curve.

3,569,660

LASER CUTTING APPARATUS

Peter T. Houldcroft, Royston, England, assignor to National Research Development Corporation, London, England

Filed July 29, 1968, Ser. No. 748,418
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 **11 Claims**



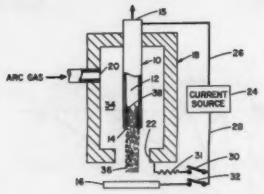
A workpiece is cut or gouged by moving a concentrated laser beam along its surface and directing on to the moving region of the workpiece, at which the laser beam is concentrated, a jet of gas; a material which is different from the material of the workpiece is also introduced in this region. The additional material assists the cutting or gouging in that it has a fluxing action with the material of the workpiece and/or an exothermic reaction with the gas.

3,569,661

METHOD AND APPARATUS FOR ESTABLISHING A CATHODE STABILIZED (COLLIMATED) PLASMA ARC

Robert W. Ebeling, Jr., Maxatawny, Pa., and George A. Klasson, Port Washington, N.Y., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 9, 1969, Ser. No. 831,319
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 **11 Claims**



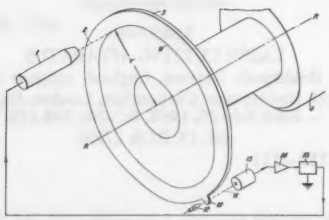
Disclosed is a method and apparatus for establishing a cathode stabilized (collimated) plasma arc. The invention is characterized in that by utilizing a hollow tubular cathode and causing the cathode arc spot to locate on the inside wall of the cathode electrode the plasma arc becomes collimated and stabilized.

3,569,662

CONTROL APPARATUS FOR USE WITH AN ELECTRIC MOTOR

Alan John Thomas, Skipton, England, assignor to Rolls-Royce Limited, Derby, England

Filed Aug. 13, 1968, Ser. No. 752,291
Claims priority, application Great Britain, Aug. 24, 1967, 39072/67
Int. Cl. B23k *37/04;* **H02p** *7/06*
U.S. Cl. 219—124 **6 Claims**



Control apparatus e.g. for welding machines, for use with an electric motor includes a circuit having a negative feedback amplifier of adjustable input amplitude and gain, its output being passed to the motor to control its rotational speed. The input side of the circuit has a variable resistor and a potentiometer the settings of which determine the rotational speed of the motor. In an alternative, the amplifier output drives a meter, the input voltage being derived from a tachogenerator driven by the motor and being thus proportional to motor speed.

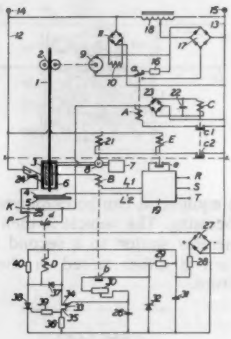
3,569,663

APPARATUS FOR AUTOMATIC ARC SPOT WELDING

Klas Bertil Weman, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Goteborg, Sweden

Filed Jan. 31, 1969, Ser. No. 795,626
Claims priority, application Sweden, Feb. 8, 1968, 1638
Int. Cl. B23k *9/10*
U.S. Cl. 219—127 **9 Claims**

An arc spot welding operation initiated and sustained by feeding a fusible electrode towards a workpiece at substantially constant speed while supplying to the electrode a welding voltage provided by a constant-potential source. A DC current flows in a capacitor circuit for the duration of the welding current only (or, alternatively, for the duration of the welding arc only). The DC current is interrupted during transient interruptions of the welding current or during transient extinctions of the welding arc, and the electrode advancement is interrupted as soon as the capacitor voltage has reached a predetermined level.

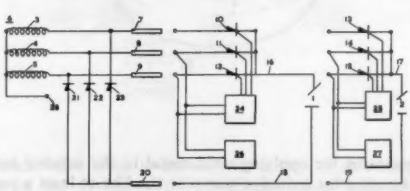


3,569,664

WELDING POWER SOURCES

Richard A. A. Newman, and Brian C. Doxey, Welwyn, Hertfordshire, London, England, assignors to The British Oxygen Company Limited, London, England

Filed July 31, 1967, Ser. No. 657,104
Claims priority, application Great Britain, Aug. 9, 1966, 35603/66
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 **8 Claims**



A power source for electric welding equipment comprising a central current source and two or more remote operator sets, has at the central source at least one half-wave rectifier which is common to all the remote operator sets.

A second rectifier is provided for each of the operator sets which include a power control means for individually controlling the power to each of the operator sets. The combined first and second rectifiers provide full-wave rectification with each individual combination of first and second rectifiers having a power capability different than the individual power capability of each of the other rectifier combinations.

3,569,665

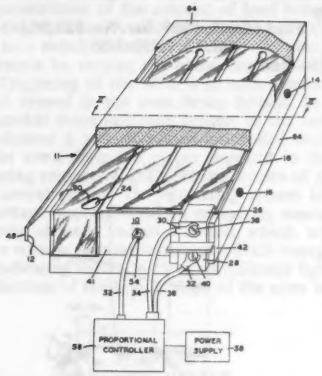
FIXED TEMPERATURE, RAPID RESPONSE, HIGH ENERGY HEATING DEVICE

Nathaniel E. Hager, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 28, 1969, Ser. No. 811,539
Int. Cl. H05b *1/00;* **F24h** *9/02*
U.S. Cl. 219—200 **8 Claims**

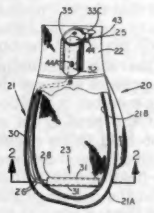
A rapid response heating device employing a heat funneling principle combined with minimal thermal resistances for attaining heat fluxes up to 50 kw/ft² and for maintaining a fixed temperature at the output working surface despite large

changes in thermal load. The device is heated with an electric foil heater having its power input regulated by a control



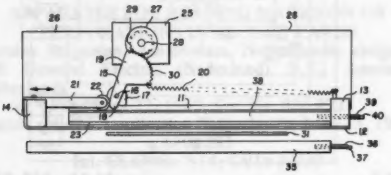
device responsive to temperature changes within said device and has a large heat input area as compared with a small heat output area.

3,569,666
SELF CONTAINED LOW VOLTAGE BATTERY OPERATED GLOVE
Dennis J. Murphy, Poughkeepsie, and Charles F. Balz, Beacon, N.Y., assignors to Timely Products Corporation
Filed July 22, 1969, Ser. No. 843,710
Int. Cl. H05b *3/36*
U.S. Cl. 219—211 **2 Claims**



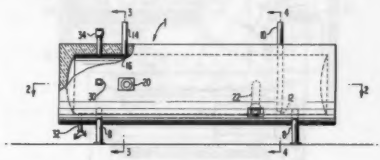
A self contained low-voltage battery operated glove in which a pocket is located on the back of the wrist portion of the glove for supporting a small low voltage battery directly thereon. A low voltage heater connected in circuit with the battery is located within the glove adjacent the fingertip portion on the palm side.

3,569,667
CONTROL FOR ELECTRIC STRIP HEATER
Edward L. Ryswick, Rochester, N.Y., assignor to Varispace Industries, Inc., East Rochester, N.Y.
Filed July 11, 1969, Ser. No. 841,006
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **17 Claims**



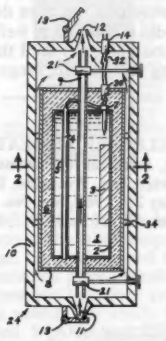
A control for a strip heater supported on a frame uses a lever pivoted on the frame to have a short lever arm engaged by a carriage carrying the movable end of the strip and a long lever arm coupled to an adjustable element in an electric circuit having a variable power output for energizing the strip.

3,569,668
WATER HEATING AND STORAGE TANK
Carl B. Carlisle, 8716 Hurst Ave., Savannah, Ga.
Filed July 22, 1969, Ser. No. 843,722
Int. Cl. H05b *1/00*
U.S. Cl. 219—316 **2 Claims**



A liquid heater, typically a household hot water heating and storage tank, is of cylindrical shape, horizontally disposed, with an inlet near the bottom at one end and an outlet near the top at the opposite end, and with heating means, either electrical or gas-burner, between the inlet and outlet, in or on a lower side quadrant of the tank interior, so as to generate circulation of the liquid by convection currents around the inside tank wall surface.

3,569,669
PORTABLE HEAT STORAGE UNIT
Frank A. March, 1913 N. Ode St., Arlington, Va. 22209
Filed Feb. 12, 1969, Ser. No. 798,614
Int. Cl. B63c *11/28;* **F24h** *7/04;* **H05b** *1/00*
U.S. Cl. 219—378 **9 Claims**

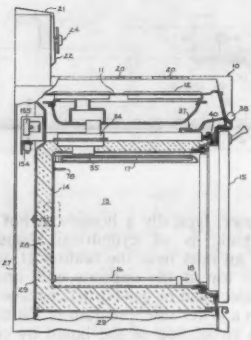


A system is provided for heating suits of free-swimming divers subjected to cold water. The system includes a heat storage unit that utilizes a combination of the latent heat of fusion and the sensible heat of a heat storage material having a latent heat of fusion of at least 35 cal./gm. and a melting point of at least 50° C. stored in a watertight container to heat at a desired rate a heat transfer fluid that is circulated between compartments in the diver's suit and the heat storage unit. An insulated envelope surrounds the container and defines with the container a conduit for passing heat transfer fluid in heat transfer relationship with the heat storage material. Heating means connectable to an external source are provided for initially heating the storage material. Control means are provided for increasing the effective heat transfer area and the overall heat transfer coefficient of the container after the latent heat of fusion has been extracted from the heat storage material so that the sensible heat can be extracted from the material at the desired rate.

3,569,670
SAFETY DOOR LATCHING SYSTEM FOR SELF-CLEANING OVEN HAVING HYDRAULIC THERMOSTAT WITH CAM-ACTUATED AUXILIARY SWITCH

Christian A. Eff, Louisville, Ky., assignor to General Electric Company

Filed Aug. 4, 1969, Ser. No. 847,350
Int. Cl. F27d *11/02*
U.S. Cl. 219—413 12 Claims

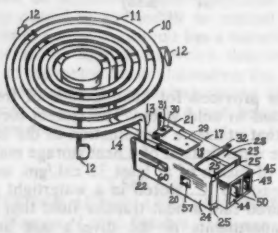


A hydraulic oven thermostat for use with a baking oven having a high temperature self-cleaning oven cycle where the thermostat is furnished with an auxiliary switch and camming means interposed between the thermostat knob and the auxiliary switch for coordinating them in both the cooking position and an oven cleaning position as a function of the setting of the thermostat. The auxiliary switch is associated with an oven door latching mechanism, an automatic locking means for the latching mechanism as well as a release means for the locking means to insure that the oven door is locked before the heat-cleaning cycle is initiated as well as insuring that the oven door may not be unlocked until the oven temperature returns to the cooking temperature range.

3,569,671
PLUG-IN ELECTRICAL HEATING UNIT

Harold O. Henning, and Harvey Levine, Evanston, Ill., assignors to Trigometer, Inc., Evanston, Ill.

Filed May 29, 1969, Ser. No. 829,034
Int. Cl. H05b *3/08*, *3/68*
U.S. Cl. 219—451 3 Claims

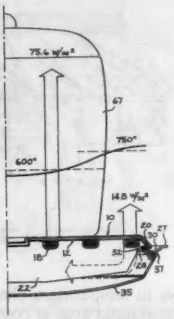


A surface electrical heating coil unit for electric ranges having an electrical receptacle and plug-in contacts insertable into the receptacle normally positioned beneath and to one side of the unit. The receptacle includes a mounting bracket by which the parts thereof are held in an assembled relation and are connected in place relative to the heating unit.

3,569,672
LOW THERMAL MASS, PLATE SURFACE HEATING UNIT

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company

Filed May 1, 1969, Ser. No. 820,904
Int. Cl. H05b *3/68*
U.S. Cl. 219—464 14 Claims

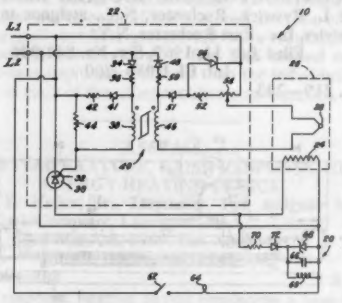


A light weight solid plate surface heating unit of low thermal mass having a top plate of high thermal conductive material for distributing the heat rapidly and uniformly over the plate. The top plate is of composite sheet material with a center core selected from the group of high thermal conductivity materials such as copper, silver and aluminum, and an outer skin selected from the group of corrosion and oxidation resisting materials such as stainless steel, nickel and chromium. There is a heating means for the plate in the form of a metal sheathed electrical resistance heating element of coiled configuration adapted to be held against the underside of the plate. It is important that the top plate remain as flat as possible at all times so as to reduce the formation of gaps between the surface of the top plate and the bottom surface of cooking utensils carried thereon. Reinforcing means are provided for the top plate to prevent warpage due to thermal stresses. A thermal reflecting member is positioned beneath the heating unit to redirect the heat in an upward direction. The heating unit may be held in an opening in the cooktop by providing an adjustable tension member joining the reinforcing member of the heating unit with the reflecting member such that the edge of the opening in the cooktop is clamped by the interaction of the top plate and the reflecting member.

3,569,673
TEMPERATURE CONTROL AND INDICATING SYSTEM

Donald P. Clark, South Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 3, 1969, Ser. No. 803,769
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 9 Claims



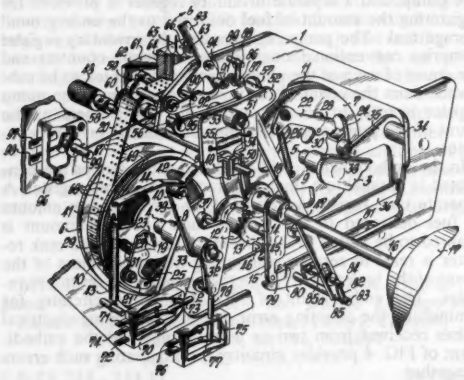
A temperature control system is disclosed in which the energization of a heating element is selectively varied in

order to control the temperature of a zone whose temperature is being maintained within preselected limits, while the power supplied to the heating element is monitored by an indicating system coupled to the heating element to provide a display representative of the amount of heat being supplied by the heating element. A silicon controlled rectifier (SCR) is utilized as a switch element for selectively energizing the heating element by varying the phase angle of triggering of the SCR. Triggering of the SCR is in turn dependent upon temperature sensed in the zone being heated. In instances where somewhat more accurate control of the temperature limits are desired a pair of silicon controlled rectifiers are provided for controlling the power supplied to the heating element during respective alternate half cycles of applied alternating current power. The indicating system includes at least one voltage responsive switch energizing means coupled to the heating element and to a switch, which, when energized by the voltage responsive means, effects energization of a suitable indicating device, such as an indicator light, to provide an indication of the temperature of the zone being controlled.

3,569,674
READING DEVICE

Willy Becker, Behringersdorf near Nurnberg, and Hans Hueser, Nurnberg, Germany, assignors to Diehl, Nurnberg, Germany

Filed Apr. 21, 1967, Ser. No. 634,055
Claims priority, application Germany, Apr. 26, 1966, Aug. 11, 1966, D49951;D50823
Int. Cl. G06k *7/015;* **B65h** *25/12, 75/34*
U.S. Cl. 235—61.11 **10 Claims**



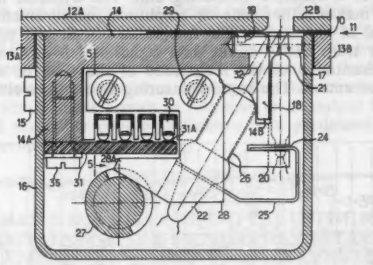
Reading device for a coated tape having two reels on which the tape is mounted and drive means engageable with one or the other of the reels to drive the tape in advancing or return directions past a reading head with control means responsive to drive of the tape to shift the drive means from one reel to the other or to halt it in an intermediate position of disengagement from both reels.

3,569,675
APPARATUS FOR READING MARKS ON OR PERFORATIONS IN RECORD CARDS

Bernardus Stegeman, Amsterdam, Netherlands, assignor to Bull General Electric (Nederland) N.V., Amsterdam, Netherlands

Filed May 22, 1969, Ser. No. 826,871
Claims priority, application Netherlands, June 13, 1968, 6808283
Int. Cl. G06k *7/14;* **G01n** *21/30*
U.S. Cl. 235—61.11 **5 Claims**

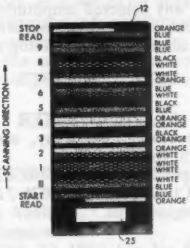
In a record card sorting machine the cards comprise a plurality of columns for recording data by means of perforations and/or marks of dark color and a card is fed through a card passage in a direction parallel to the columns. A reading apparatus comprises a support for fixing a certain number of elongate cylindrical lenses in such manner that each lens is aligned and parallel with a location for reading a corresponding column. Below the support, a movable carriage supports a scanning device with a light source and a photoelectric cell, and may be successively brought into a number of stop positions by a driving mechanism, whereby the scanning device may be aligned with each of the cylindrical lenses.



3,569,676
LABEL FOR A MARK SENSING SYSTEM

Francis H. Stites, 8 Bennett Road, Wayland, 01778, and Bradstreet J. Vachon, 32 Prior Drive, Framingham, Mass. 01701

Filed July 17, 1968, Ser. No. 745,585
Int. Cl. G06k *19/00*
U.S. Cl. 235—61.12 **4 Claims**



A coded retroreflective label for use in an automatic vehicle identification system. The label comprises a vertical array of rectangular orange, blue, white, and black retroreflective stripes arranged in selected paired combinations whereby to represent in a two-position base-four code format information pertaining to a vehicle on which the label is affixed. Distinguishable coded START and STOP stripe-pairs are provided at opposite ends of the array to respectively initiate and terminate processing of the data content of the label. Each white stripe paired with an orange or a blue stripe is masked with a plurality of black nonreflecting dots to reduce the reflectivity thereof to approximate that of the orange or blue stripe paired therewith. A black nonretroreflective border is also provided to isolate the stripes from the background on which the label is disposed.

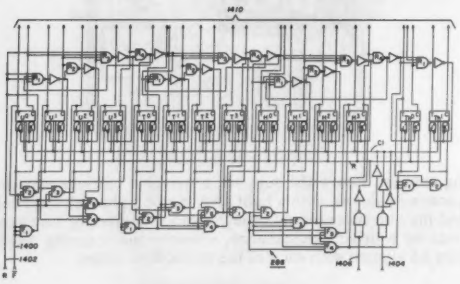
3,569,677
DATA READOUT SYSTEM

William E. Bray, and Julian C. Hart, Houston, Tex., assignors to Texas Instruments Incorporated, 13500 North Central Expressway, Dallas, Tex.

Filed Dec. 7, 1965, Ser. No. 512,154
Int. Cl. G06m *3/08, 3/14;* **G06f** *7/02*
U.S. Cl. 235—92 **21 Claims**

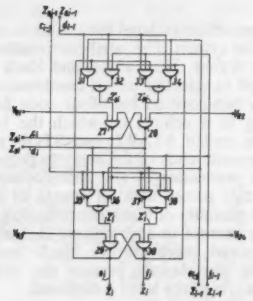
A system for automatically making substantially any static or dynamic test on a multilead integrated circuit. The system includes a test station having a plurality of DC bias supplies,

a plurality of pulse generators for producing repetitive pulse waveforms, a socket for receiving the integrated circuit, switch means for selectively connecting any DC bias supply and/or any pulse generator to any lead or leads of the integrated circuit, and sensing means for selectively connecting any lead of the integrated circuit to either a static measuring unit or a dynamic measuring unit. The dynamic measuring unit makes either time or amplitude measurements on the signal at any lead of the integrated circuit and produces a pulse train and a count data signal which are collectively representative of the magnitude of the time or amplitude measurement. The static measuring unit makes either static



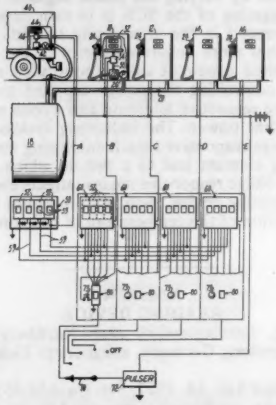
voltage or current measurements on the signal at any selected lead of the integrated circuit and produces a pulse train signal the frequency of which is representative of the magnitude of the measurement. A data readout system counts the pulses either from the dynamic measuring unit during the count data signal, or the pulses from the static measuring unit during a predetermined reference time period to indicate the results of the measurement. A programmable control means automatically operates the total system to make substantially any selected amplitude, time, voltage or current measurement on the signal occurring at or between substantially any lead or leads of the integrated circuit.

3,569,678
STATIC COUNTER
Günter Emde, Neubiberg, Germany, assignor to Bolkow G.m.b.H., Munich, Germany
Filed Apr. 28, 1967, Ser. No. 634,617
Int. Cl. G06m *3/04;* **H03k** *21/16*
U.S. Cl. 235—92 **9 Claims**



A static counter for forward and backward counting comprises a plurality of counting stages each of which includes a prestorage portion and a main storage portion. In advance of the counter for the first binary digit, there is connected an input gate circuit which indicates any change of state of the counting signal for the first binary digit, that is, whether the counting is to be changed from forward to backward or vice versa. The binary digit stages succeeding the first binary digit stage are controlled by the storage state of the respective immediately preceding counting stage.

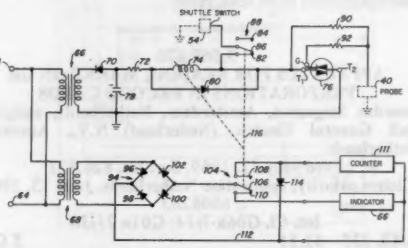
3,569,679
COUNTING SYSTEM
Donald A. Bly, West Simsbury, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Oct. 5, 1967, Ser. No. 673,041
Int. Cl. G06m *1/12, 3/11*
U.S. Cl. 235—92 **13 Claims**



A counting system for a gasoline service station for accounting for the amount of fuel remaining in the station storage tank. In the embodiment of FIGS. 1 and 2 a register is employed for each of the service station pumps to provide an accounting of the amount of fuel delivered by the respective pump, and a separate inventory register is provided for registering the amount of fuel delivered to the underground storage tank. The pump registers and the inventory register comprise conventional single wheel magnetic counters and the count of each of the pump registers is adapted to be subtracted from the count of the inventory register as the pump register is reset to zero by adding the complement of the count of the pump register to the count of the inventory register.

In the embodiments of FIGS. 3 and 4 the pumps are connected in parallel to a single subtracting inventory register. A separate tank register is provided for recording the amount of fuel delivered to the storage tank and this amount is adapted to be added to the inventory register as the tank register is reset to zero by subtracting the complement of the count of the tank register from the count of the inventory register. The embodiment of FIG. 3 provides circuitry for diminishing the counting error due to overlapping electrical pulses received from two or more pumps and the embodiment of FIG. 4 provides circuitry for eliminating such errors altogether.

3,569,680
ARTICLE-COUNTING APPARATUS
Clement F. Cox, Bronx, N.Y., assignor to Industrionics Controls, Inc., New York, N.Y.
Filed June 4, 1969, Ser. No. 830,385
Int. Cl. G06m *7/00*
U.S. Cl. 235—92 **10 Claims**



A counter control circuit which requires two separate

signals generated by first and second sensors to cause the counter to register a count. The circuit comprises a relay controlled by a thyristor-type semiconductor switch which is turned on and off by signals from the two sensors, and means controlled by the relay for operating the counter.

3,569,681

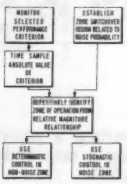
METHOD AND SYSTEM FOR ADAPTIVE CONTROL

Richard W. Koepcke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 15, 1967, Ser. No. 646,273

Int. Cl. G05b *13/02*

U.S. Cl. 235—150.1 **9 Claims**


MONITOR SELECTED PERFORMANCE CRITERION
ESTABLISH ZONE SWITCHOVER VERSUS RELATED TO NOISE PROBABILITY
TIME SAMPLE ABSOLUTE VALUE OF CRITERION
REPETITIVELY IDENTIFY ZONE OF OPERATION FROM RELATIVE MAGNITUDE RELATIONSHIP
USE DETERMINISTIC CONTROL IN NON-NOISE ZONE
USE STOCHASTIC CONTROL IN NOISE ZONE

Adaptive control methods and systems are provided that utilize the relationship between at least one operative criterion of system performance and at least one reference to control the use of one of at least two control laws which establish different operative zones, which are stochastic and deterministic in character. The different control laws used in these two zones provide wide bandwidth under conditions of large signal excursion (deterministic zone), and stability and linearity when the system is at or near the set point (stochastic zone). The error signal may comprise the chosen system performance criterion, and the chosen control laws may differ by using different controller coefficients or by using different samples of system operation. Preferably the switchover point is set with respect to a given multiple of the standard deviation of the noise terms in an equation descriptive of the system, such that the signal excursion is identified with a high degree of probability as being of non-noise origin.

3,569,682

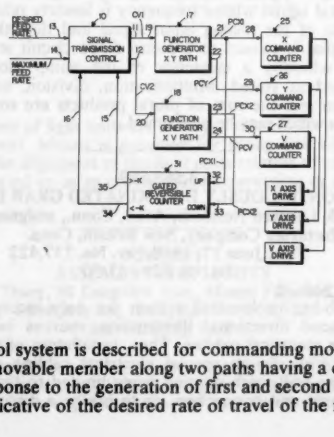
MULTIPLE PATH NUMERICAL CONTROL SYSTEM

James P. Tipton, Waynesboro, and Donald L. Logerwell, Alexandria, Va., assignors to General Electric Company

Filed Feb. 2, 1968, Ser. No. 702,697

Int. Cl. G05 *11/26, 19/36*

U.S. Cl. 235—151.11 **14 Claims**



A control system is described for commanding motion of a machine movable member along two paths having a common axis in response to the generation of first and second feedrate signals indicative of the desired rate of travel of the machine along the two paths. First and second function generators convert the first and second feedrate signals into first and second command signals, each of which includes a component signal which commands motion of the machine movable member along the common axis. A gated reversible counter is connected to each of the function generators, the magnitude and direction of its count being indicative of the rates of generation of each of the common axis component command signals. A logic network is connected to the output of the gated reversible counter and to the inputs of the function generators and functions to stop the transmission of either of the feedrate signals in response to an output from the gated reversible counter indicative of a predetermined count therein.

3,569,683

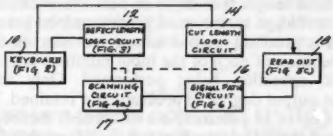
APPARATUS FOR DETERMINING THE OPTIMUM COMBINATION OF ONE OR MORE OF A SET OF SUBLENGTHS FOR A GIVEN OVERALL LENGTH

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 14, 1968, Ser. No. 712,984

Int. Cl. G06f *15/46*

U.S. Cl. 235—152 **17 Claims**


KEYBOARD (FIG 2)
DEFECT LENGTH LOGIC CIRCUIT (FIG 3)
CUT LENGTH LOGIC CIRCUIT
READ OUT (FIG 5C)
SCANNING CIRCUIT (FIG 4A)
SIGNAL PATH CIRCUIT (FIG 6)

The following specification discloses a computing apparatus for automatically determining the optimum combination of one or more of a set of M sublengths for a given overall length comprised of a selected one of said M sublengths and a selected one of a set of N incremental lengths such that the sum of the elements of the optimum combination is the largest possible value less than the overall length.

3,569,684

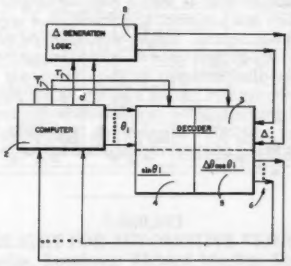
SINE-COSINE GENERATOR COMPRISED OF A DIODE ARRAY

Gerald J. Burnett, Anaheim, Calif., assignor to North American Rockwell Corporation

Filed Mar. 23, 1967, Ser. No. 625,395

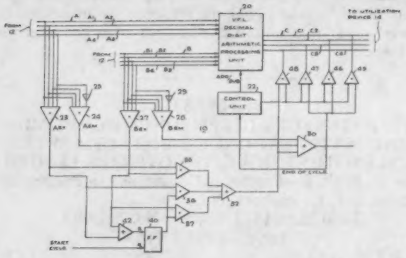
Int. Cl. G06q *7/22*

U.S. Cl. 235—152 **7 Claims**



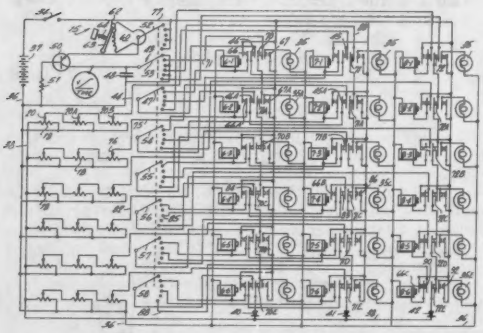
A sine-cosine generator comprised of a diode array forming a fixed memory for storing binary values of the sines of angles and an array integral with the memory array for addressing locations within said memory. The preferred embodiment uses a diode array to mechanize an interpolation scheme for reducing the storage requirements when high accuracy sine-cosine values are required.

3,569,685
PRECISION CONTROLLED ARITHMETIC PROCESSING SYSTEM
Gilman D. Chesley, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.
Filed July 11, 1968, Ser. No. 744,184
Int. Cl. G06f 7/48
U.S. Cl. 235—156 16 Claims



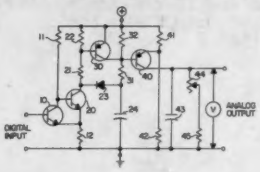
A precision-controlled arithmetic processing system uses a variable field length technique to perform arithmetic operations on multidigit numbers of predetermined precision, and generates a resultant output whose precision is determined by the precision of each of the input numbers and the type of arithmetic operation being performed. Only those digits within the output degree of precision are retained. Digits outside this degree of precision are discarded, thereby eliminating the problem of accumulated digits in variable field length processing.

3,569,686
CALCULATOR FOR COMPETITIVE EVENTS
Leo Comorau, Long Island City, N.Y.
Filed Aug. 28, 1968, Ser. No. 755,887
Int. Cl. G06g 7/00, 7/48
U.S. Cl. 235—193 6 Claims



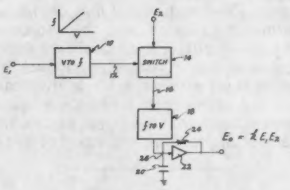
A calculator for determining the probable results of any competitive event such as a horse race. A calculating circuit is provided for each entry and a terminal voltage is provided which is responsive to at least three known ratings of the entry. The rating values are entered into each calculating circuit by an operator and, when all the circuits have been adjusted, a dial switch is turned and a relay system lights three lamps, indicating which entry will probably win the event. Second and third ratings are also shown.

3,569,687
PULSE RATE TO ANALOGUE CONVERTER PRODUCING AN ANALOGUE OUTPUT SIGNAL PROPORTIONAL TO THE PRODUCT OF TWO INPUT PULSE RATES
Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company
Filed Apr. 24, 1968, Ser. No. 723,659
Int. Cl. G06j 7/16, 1/02
U.S. Cl. 235—194 12 Claims



Circuitry for converting a plurality of pulses into an analogue signal having a magnitude representative of the number of pulses supplied.

3,569,688
A MULTIPLIER IN WHICH A CAPACITOR IS CHARGED AT A RATE PROPORTIONAL TO THE PRODUCT OF TWO ANALOG INPUTS
Thomas A. Brendle, Hamburg, N.Y., assignor to Audn Corporation, Hamburg, N.Y.
Filed Dec. 24, 1968, Ser. No. 786,723
Int. Cl. G06j 7/16, 1/00
U.S. Cl. 235—194 9 Claims

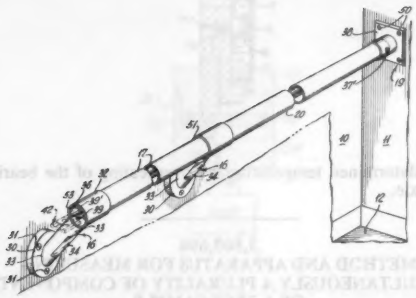


A capacitor is charged by a train of pulses derived from a pair of analog input signals and a feedback amplifier is connected to the capacitor to discharge it at the same rate as it is being charged so that the voltage across the capacitor is held at some fixed level to cause the voltage drop across the feedback path to be proportional to the product of the analog input signals. One analog input signal is converted to a digital signal whose frequency is linearly related to the amplitude of the analog input signal and the other analog input signal is passed to a pump diode circuit at such frequency whereby a capacitor of the pump diode circuit is charged as stated. Multiplication, division, square root extraction and the sum of plural products are some of the functions which may be performed.

3,569,689
CONTINUOUSLY ILLUMINATED GRAB BAR
Frederick Leonard Nestrock, Avon, Conn., assignor to Union Manufacturing Company, New Britain, Conn.
Filed June 17, 1968, Ser. No. 737,422
Int. Cl. F21v 33/00
U.S. Cl. 240—2 13 Claims

A grab-bar or handrail system not only incorporates its own spaced directional illumination sources but also its complete electrical cabling. Thus, installation of the system requires virtually no special electrical cabling or conduit within the wall, such ducting being limited to that required for a single end connection, or to bridge a discontinuity in

the handrail, as where the wall is interrupted for a doorway, window, or the like opening. Illumination sources are provided within and as part of each supporting bracket, and individual electrical connection thereof to the supply cabling is

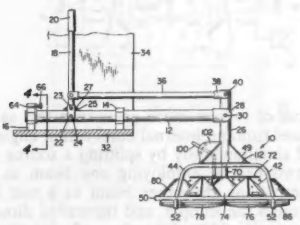


made adjacent each support and within the grab-bar. Provision is made for automatic transfer from house voltage supply to standby storage supply, in the event of power failure, thus assuring the maximum safety that constant illumination can provide.

3,569,690
CLUSTER LIGHT SUPPORT AND CONTROL MECHANISM

Donald A. Nelson, Ventura, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Aug. 15, 1968, Ser. No. 753,039
Int. Cl. B64d *47/02*
U.S. Cl. 240—7.7 **3 Claims**



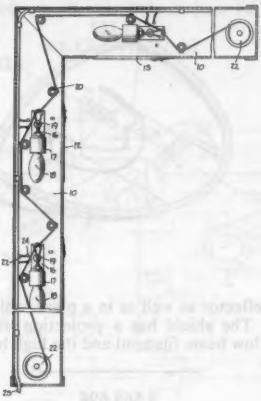
A number of light units are arranged in a cluster on a common support. Means is provided for tilting and aiming the cluster. The alignment of the light units relative to each other can be varied so as to create either converging or diverging beams.

3,569,691
ASSEMBLY FOR LIGHTS

Robert F. Tracy, 30 Longview Ave., Mount Freedom, N.J.

Filed July 23, 1968, Ser. No. 746,923
Int. Cl. F21p *1/02*
U.S. Cl. 240—10 **3 Claims**

An assembly for hiding or exposing lights can be readily mounted around a building, forming an integral part thereof. This assembly comprises a channel base fitted with a cover and having a plurality of openings to allow light bulbs to swing in and out. The bulbs are attached to sockets which

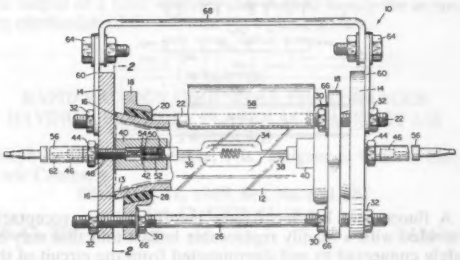


are, in turn, mounted on swivel bases secured to the channel base. The swivel bases are connected to a pulley assembly which operates to swing the bases through the openings.

3,569,692
UNDERWATER FLOODLIGHT FIXTURE

Louis A. Johnson, 350 B Kern St., and William C. Ramsey, 3030 Merced Place, Oxnard, Calif. 93030

Filed Jan. 29, 1968, Ser. No. 701,357
Int. Cl. F21v *31/00*
U.S. Cl. 240—26 **1 Claim**



An underwater electric light fixture which includes an elongated transparent tube sealed at each end and provided with an electric bulb positioned therein. Each end of the bulb is received in an adjustable socket located at opposed axial ends of the transparent tube. Widely spaced apart connectors attached to the outer ends of opposed bulb sockets allow replacement of the entire light fixture by a simple unplugging action without power shutoff and without arcing between the unplugged connectors. An external reflective member may be provided adjacent the transparent tube to enhance visibility.

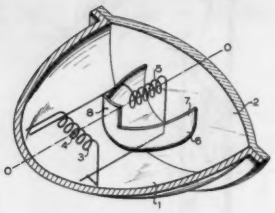
3,569,693
HEADLIGHT FOR AUTOMOTIVE VEHICLES

Gerhard Lindae, Leonberg; Richard Mueller, Stuttgart, and Helmut Gaissert, Pforzheim, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 18, 1969, Ser. No. 817,375
Claims priority, application Germany, Apr. 20, 1968, P 17 72 256.4
Int. Cl. F21v *7/09*
U.S. Cl. 240—41.35 **10 Claims**

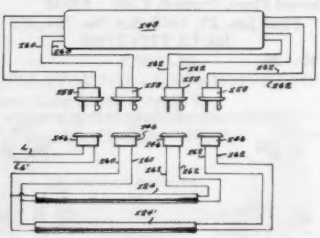
The low beam filament of a headlight for automotive vehicles is flanked from below and at both sides by a glare-

eliminating light reflecting shield having a specific cross-sectional configuration in a plane at right angles to the optical



axis of the reflector as well as in a plane which includes the optical axis. The shield has a projection which is located between the low beam filament and the high beam filament.

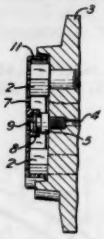
3,569,694
LIGHTING FIXTURE WITH DETACHABLE BALLAST
Oscar Lawrence Comer, and Wyndell G. Muse, Americus, Ga., assignors to Metalux Corporation, Americus, Ga.
Filed Aug. 1, 1968, Ser. No. 749,530
Int. Cl. H05b *33/00, 33/08*
U.S. Cl. 240—51.11 **3 Claims**



A fluorescent lighting fixture incorporating a receptacle provided with a readily replaceable ballast unit that may be safely connected to and disconnected from the circuit of the fixture while it is energized. A two-part electrical connector unit is provided in the circuit, one part being fixed to the receptacle and the other part mounted together with the ballast as a replaceable component arranged to engage and disengage the connector unit parts as an incident of installation and removal of the replaceable component. Preferably, the connector unit parts comprise a male plug and complemental female socket specially arranged to cause the respective high voltage contacts thereof to become engaged prior to, and disengaged subsequent to, engagement of the respective low voltage contacts thereof during installation and removal of the replaceable component.

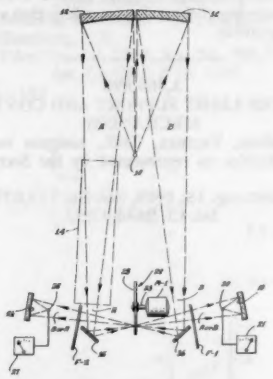
3,569,695
RAILROAD CAR AXLE BEARING OVERHEAT INDICATOR
Ralph M. McLean, St. Louis, Mo., assignor to Schaefer Equipment Company, Pittsburgh, Pa.
Filed July 22, 1969, Ser. No. 843,494
Int. Cl. B61k *9/04*
U.S. Cl. 246—169D **5 Claims**

The roller bearing cover mounted on each end of a railroad car axle is provided with a projecting grease fitting. Tightly gripping the outer end of this fitting is the socket of a cap that covers at least part of the bearing cover. At least a portion of the outer surface of the cap is a predetermined color that will change to another color if the cap is heated to



a predetermined temperature by overheating of the bearing and axle.

3,569,696
METHOD AND APPARATUS FOR MEASURING SIMULTANEOUSLY A PLURALITY OF COMPONENTS OF A TEST SAMPLE
Eskil L. Karlson, Stamford, Conn., assignor to Pollution Control Industries Inc., Stamford, Conn.
Filed Oct. 8, 1968, Ser. No. 765,921
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 **5 Claims**

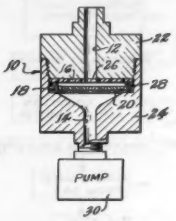


The amounts of two or more gases in a test sample of a mixture of gases from an internal combustion engine exhaust are measured simultaneously by splitting a source of radiant energy into two beams, employing one beam as a control beam, and employing the other beam as a test beam and passing it through the sample, and thereafter directing both beams from opposite sides of the plane of a rotating chopper, which has a mirror surface on both sides, alternately to two band-pass filters having transmission corresponding respectively to the absorption bands of the gases being measured, and directing the radiation passing said filters respectively to detector means.

3,569,697
THERMOLUMINESCENT DOSIMETER FOR PROVIDING A TOTAL RADIATION MEASURE OF RADIO-ACTIVITY IN A FLUID MEDIUM TO WHICH THE DOSIMETER IS EXPOSED
David E. McCurdy, Fort Collins, Colo., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 11, 1969, Ser. No. 798,284
Int. Cl. G01t *1/11, 1/20*
U.S. Cl. 250—43.5 **3 Claims**

The present dosimeter includes a cylindrical housing having an intake port at one end and an exhaust port at the op-

posite end. A thermoluminescent disc and a radioactivity filter are coaxially and spatially mounted with respect to each other within the housing, with the thermoluminescent disc being mounted adjacent the intake port and having an aperture therethrough coaxially aligned with the intake port. The radioactivity filter is sealed to the interior walls of the housing. A pump draws a fluid medium through the ports of the



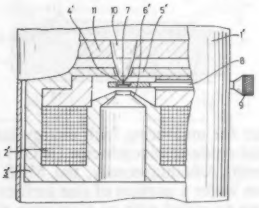
housing to effect deposition of radioactive material of the fluid medium on the radioactivity filter. Energy from the radiation emitted by the ionizing radioactive material is absorbed by the thermoluminescent disc and stored. A heat source is provided to excite the thermoluminescent disc, the emitted light intensity therefrom being a measure of the detected radiation.

3,569,698

PARTICLE-BEAM APPARATUS PROVIDED WITH A PHASE-SHIFTING FOIL WHICH CORRECTS FOR WAVE ABERRATIONS

Karl-Heinz Herrman, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 18, 1969, Ser. No. 834,316
Claims priority, application Switzerland, June 28, 1968, 9724/68
Int. Cl. H01j *37/26*
U.S. Cl. 250—49.5 **4 Claims**



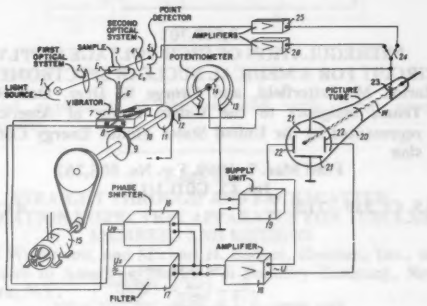
A particle-beam apparatus has a beam axis and a beam generator for issuing particle beams along the axis including a primary beam coincident with the axis. An electron-optical lens for focusing an image on an image plane causes wave aberrations that shift the respective phases of the particle beams. A foil is disposed in the path of the beams and shifts the phases of the beams with respect to the phase of the primary beam in dependence upon their respective radial distances from the axis so that the phases are shifted to correct for the shift caused by the wave aberrations. The foil has concentric discontinuities in its thickness at which the phase-shifting effect of the foil decreases in steplike fashion in radial distance, by values which correspond to whole number multiples of the wavelength of the particle beam, each adjacent pair of the discontinuities enclosing an annular foil portion having a thickness which increases continuously in radial direction.

3,569,699

A DEVICE FOR DETECTING CRYSTALLOGRAPHIC DEFECTS IN SEMICONDUCTOR CRYSTALS

Andrzej Cielecki, ul. Polna 54m50, Warsaw, Poland

Filed June 14, 1968, Ser. No. 737,203
Claims priority, application Poland, June 14, 1967, P. 121,133
Int. Cl. G01n *21/00*
U.S. Cl. 250—52 **8 Claims**



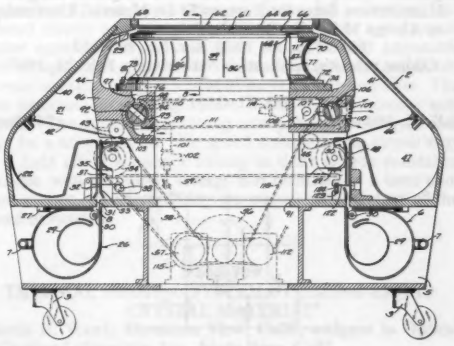
A device is provided for detecting crystallographic defects in semiconductor monocrystals and the device comprises a stationary light source, an optical system and a detector, in that order. A sample semiconductor to be tested is movably mounted between the light source and the detector with respect to a stationary light ray produced by the source. The sample is supported on an arm of a vibrator, which in turn is supported on a cam mounted on a rotary shaft. A potentiometer has a slider connected to the rotary shaft and to the vertical plates of a picture tube, whose horizontal plates are connected by means of an amplifier of a time base voltage to the output of a filter which is also used to suppiy the actuating mechanism of the vibrator via a phase shifter.

3,569,700

RAPID RADIOGRAPHIC ROLL FILM CHANGER HAVING A PRESSURE PLATEN ACTUATED BY AIR PRESSURE

Joseph G. Quinn, Milwaukee, Wis., assignor to General Electric Company

Filed Aug. 21, 1969, Ser. No. 851,881
Int. Cl. G03b *41/16*
U.S. Cl. 250—66 **7 Claims**



X-ray film is cyclically compressed, exposed, decompressed and advanced in a path between a platen and a film compression chamber and two intervening intensifying screens. A diaphragm on the chamber distends when sub-

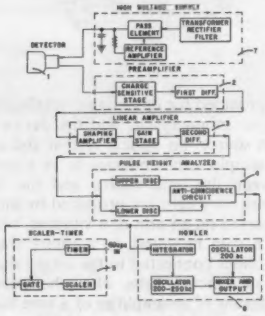
jected to air pressure and produces the contact pressure. A two-port rotary valve pressurizes the chamber, allows time for an exposure and exhausts the chamber for releasing the film. Another synchronously driven rotary valve has a port for projecting a pulse of air against the released film to form a loop in it and advance it from a preformed loop on the input side. A motor driven toothed-wheel forms the input loop from film in a feed magazine and advances the film output loop into a takeup magazine.

3,569,701

PREREGULATION OF HIGH VOLTAGE SUPPLY CIRCUIT FOR A MEDICAL NUCLEAR SPECTROMETER

Marion M. Satterfield, and George R. Dyer, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 7, 1969, Ser. No. 805,262
Int. Cl. G01t *1/17*
U.S. Cl. 250—71.5 **4 Claims**



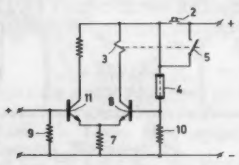
A modular, all transistorized, direct-coupled, pulse-height spectrometer for use in nuclear medical measurements is provided with means for the specific control of noise level, overloads, linearity and voltage regulation, together with compactness. These features make the present spectrometer substantially superior to the prior art tube-type spectrometers.

3,569,702

THERMOLUMINESCENT DOSIMETER WITH CONTROLLED HEATING

Raymond Georges Schayes, Bruxelles, Belgium, assignor to Manufacture Belge De Lampes Et De Materiel Electronique en Abrege M.B.L.E., Brussels, Belgium

Filed Feb. 19, 1968, Ser. No. 706,237
Claims priority, application Netherlands, Feb. 22, 1967, 6702652
Int. Cl. G01t *1/11*
U.S. Cl. 250—71.5 **14 Claims**



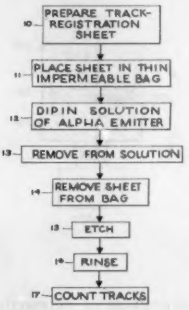
A thermoluminescent dosimetery system in which the dosimeter heating current is automatically interrupted as a given function of the resistance of the dosimeter heating element.

3,569,703

SYSTEM FOR ASSAYING SOLUTIONS CONTAINING ALPHA-EMITTING ISOTOPES USING TRACK-REGISTRATION MATERIAL

Henry Ward Alter, Danville, Calif., assignor to General Electric Company

Filed Feb. 26, 1968, Ser. No. 708,255
Int. Cl. G01t *1/04*
U.S. Cl. 250—83 **7 Claims**


10 PREPARE TRACK-REGISTRATION SHEET
11 PLACE SHEET IN THIN IMPERMEABLE BAG
12 DIPIN SOLUTION OF ALPHA EMITTER
13 REMOVE FROM SOLUTION
14 REMOVE SHEET FROM BAG
15 ETCH
16 RINSE
17 COUNT TRACKS

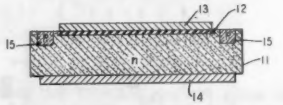
A method for determining the quantity of an alpha-emitting ingredient in a solution. A sheet of track-registration material is brought into close proximity to the solution, held there for a given period of time, and then removed. This material has the characteristic of forming damage tracks along paths traversed by alpha particles. These paths may be enlarged and made visible by treatment with a suitable etchant which enlarges the tracks. The number of tracks formed in a given area is an indication of the quantity of the alpha-emitting ingredient present in the solution.

3,569,704

RADIATION DOSIMETER

John P. Mitchell, Summit, N.J., granted to U.S. Atomic Energy Commission under the provisions of 42 U.S.C. 2182

Filed Aug. 15, 1968, Ser. No. 752,940
Int. Cl. G01t *1/02*
U.S. Cl. 250—83.3 **5 Claims**



A dosimeter for measuring high energy ionizing radiation utilizes a metal-oxide-semiconductor (MOS) structure as the sensing element. Advantageously, the MOS structure comprises a silicon wafer a portion of one surface of which is oxidized and then provided with an aluminum electrode. In one embodiment, provision for heating the MOS structure and for measuring its temperature is incorporated in the MOS structure. After exposure to ionizing radiation the MOS structure is heated with an ammeter connected between the silicon wafer and aluminum electrode. The integrated current flow is then a measure of the radiation dose received by the structure.

3,569,705

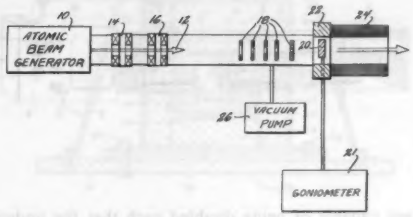
METHOD FOR PRODUCING POLARIZED ATOMS

Manfred S. Kaminsky, Hinsdale, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 1, 1969, Ser. No. 846,788
Int. Cl. H01j *37/00*
U.S. Cl. 250—84 **6 Claims**

A polarized beam of atoms is generated by passing in a partial vacuum a collimated atomic beam through a magneti-

cally saturated monocrystalline material parallel to a lattice channel of said foil. The monocrystalline material effects a charge-transfer reaction with the atomic beam to produce a polarized atomic beam, the nuclei of which are subsequently polarized by hyperfine interaction in a weak external magnetic dipole field.

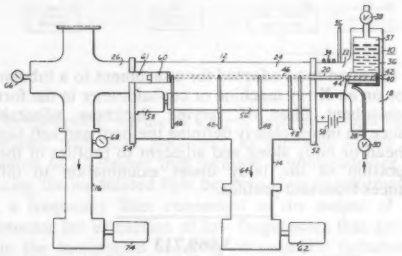


3,569,706

METHOD AND APPARATUS FOR GENERATING A CONTINUOUS BEAM OF NEUTRAL ATOMS

Benjamin B. Meckel, La Mesa, and Bernd H. Richelmann, San Diego, Calif., assignors to Physics Technology Laboratories Inc., La Mesa, Calif.

Filed Oct. 22, 1965, Ser. No. 500,580
Int. Cl. H01j *37/00*
U.S. Cl. 250—84 **5 Claims**



Method and apparatus for generating a continuous beam of sputtered neutral atoms that are sputtered from metallic members, condensed layers of gases, single crystals and condensed layers of gases on single crystals, and which continuous beam passes through an aperture providing a directed beam that may be restricted to neutral atoms having a monovelocity by a velocity selector means.

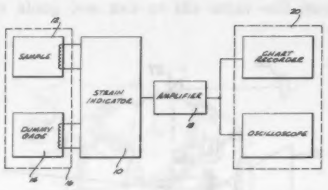
3,569,707

SYSTEM FOR MEASURING PULSED RADIATION BY MEANS OF STRAIN GAUGE TECHNIQUE

Daniel Binder, Santa Ana, and Willard M. Peffley, Fullerton, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Apr. 7, 1967, Ser. No. 629,205
Int. Cl. G01b *15/06*
U.S. Cl. 250—83.3 **3 Claims**

This is a system for measuring the energy absorbed by a material subject to pulsed nuclear radiation by detecting the thermal expansion of the material with strain gauge techniques.

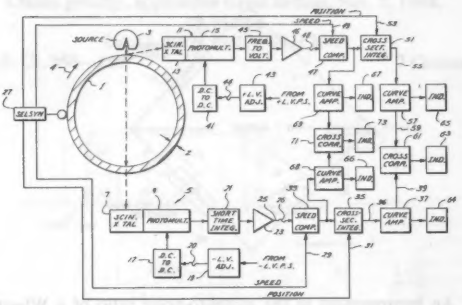


3,569,708

STRAIGHT THROUGH AND BACKSCATTER RADIATION INSPECTION APPARATUS FOR TUBULAR MEMBERS AND METHOD

Hillel Weinbaum, and Michael H. Badger, Houston, Tex., assignors to American Machine & Foundry Company, New York, N.Y.

Filed July 26, 1967, Ser. No. 656,088
Int. Cl. G01t *1/20*
U.S. Cl. 250—83.3 **37 Claims**



This invention pertains to a combination straight through and backscatter inspection of pipe wall thickness in a rotating arrangement. The source is located outside the pipe, one detector is located thereopposite and the other detector is located to receive backscatter emissions. Each detector and related circuit comprises a scintillation crystal, a photomultiplier controlled by a DC-to-DC converter and adjustable low voltage source, an electrical speed compensation circuit, a cross section integrator and a curve fitting amplifier. The two detector circuit outputs are correlated to increase sensitivity. The speed determining and position sensing means may be a selsyn motor. The speed compensating circuit may be a field effect transistor having its drain-source resistance variable with the speed voltage and included in a time constant circuit, thereby making the output independent of the speed of rotation.

3,569,709

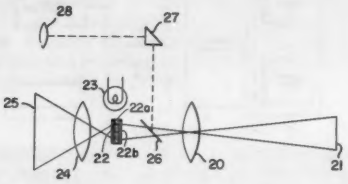
THERMAL IMAGING SYSTEM UTILIZING LIQUID CRYSTAL MATERIAL

Martin R. Wank, Mountain View, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Mar. 27, 1968, Ser. No. 732,230
Int. Cl. G01j *1/48*
U.S. Cl. 250—83.3 **11 Claims**

A thermal imaging system wherein an infrared transmitting lens forms an image of an object from infrared rays emitted by the object and projects the image on a film of liquid crystal

material having a thermally responsive color spectrum. The film of liquid crystal material is heat biased to the characteristic temperature range at which the material exhibits thermally sensitive optical scattering properties to accentuate the thermally evoked image.

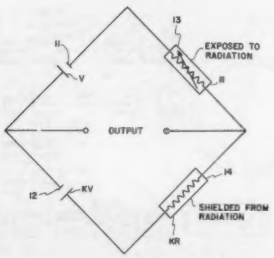


3,569,710

METHOD FOR IMPROVING THE SIGNAL-TO-NOISE RATIO OF THE WHEATSTONE BRIDGE TYPE BOLOMETER

Antony Jalink, Jr., Newport News, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 1, 1968, Ser. No. 764,252
Int. Cl. G01j *5/24*
U.S. Cl. 250—83.3 **1 Claim**



An improvement in the signal-to-noise ratio of a Wheatstone bridge type radiation measuring instrument. The improvement consists of replacing the shielded element in the bridge by an identical element except that it is K times as large and has K times as much resistance and replacing the voltage source adjacent to the replaced element by a power source producing K times as many volts where K is greater than one.

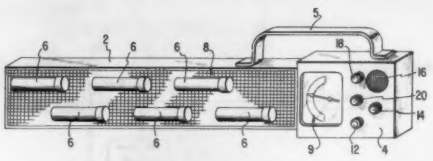
3,569,711

METHOD AND APPARATUS FOR MEASURING RADIATION WITH A PLURALITY OF DETECTORS AND DETERMINING SOURCE OF HIGHEST RADIATION EMANATING FROM A SURFACE AREA SUCH AS THE SCREEN OF A COLOR TELEVISION SET

Richard K. Stoms, Fort Thomas, Ky., and Edward Kuerze, Cincinnati, Ohio, assignors to the United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Filed June 11, 1968, Ser. No. 736,146
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 **11 Claims**

A method and apparatus for detecting radiation is disclosed, the method and apparatus having particular utility in determining X-ray emission from a surface area such as the screen of a television set. A multiple detector radiation measuring instrument is provided having a plurality of radiation sensors thereon. Novel circuitry is disclosed such that a readout is provided representing the radiation sensor having the highest output, this output signaling the presence of undesired radiation from some location on the screen surface. All except one of the plurality of radiation detectors or sensors are capable of being disabled such that the undesired source of radiation can be localized on the screen surface.

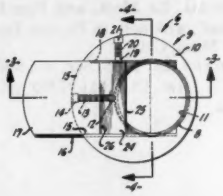


3,569,712

FILTRATION HEAD FOR X-RAY MACHINE WHICH IS REMOVABLY AND ROTATABLY SUPPORTED ON THE X-RAY COLLIMATOR

Edward A. Avakoff, 2320 Valdivia Way, Burlingame, Calif.

Filed May 31, 1968, Ser. No. 733,652
Int. Cl. G03b *41/16*
U.S. Cl. 250—86 **5 Claims**



A filtration head adapted for attachment to a tubular collimator on an X-ray machine or cephalometer in the form of a ray-absorbent filter of varying thickness adjustable to produce an image clearly defining the hard and soft tissues of the head or body along and adjacent to profiles of the head or portion of the body under examination to different distances from said profiles.

3,569,713

THYROID GLAND X-RAY PROTECTOR

William F. Via, Jr., 15 Clark Drive, Hartford, Conn.

Filed Feb. 5, 1969, Ser. No. 796,726
Int. Cl. G21f *1/12*
U.S. Cl. 250—108 **2 Claims**

The X-ray protector for the thyroid gland is in the form of a shield which covers the forward portion of the neck over and above the larynx for shielding the thyroid gland from primary and secondary rays from an X-ray machine. The material of the shield is formed from sandwiched layers of vinyl or other plastic, with a leaded layer therebetween.

3,569,714

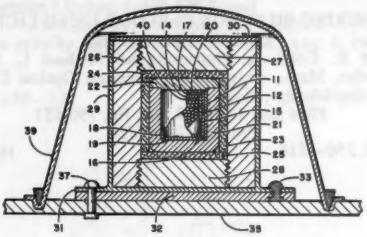
PROTECTED RADIOISOTOPIC HEAT SOURCE

Charles G. Anderson, Carlisle; Vincent L. Avona, Bellbrook, and Donald P. Kelly, Kettering, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 14, 1969, Ser. No. 876,932
Int. Cl. G21f *1/00*
U.S. Cl. 250—108 **7 Claims**

A radioisotopic heat source including a container with plurality of closed chambers cooperating to preserve integrity of

the contained radioactive heat source against impacts, projectiles, extreme temperatures, and other various environmental conditions pertaining to missiles for carrying the heat source into outer space and landing it on the moon.

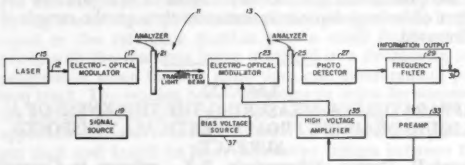


3,569,715

ELECTRO-OPTICAL TELEMETRY SYSTEM RECEIVER UTILIZING NEGATIVE FEEDBACK TO ELIMINATE ATMOSPHERICALLY INDUCED LOW FREQUENCY LIGHT BEAM INTENSITY VARIATIONS

Robert R. Horning, Livermore, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 5, 1968, Ser. No. 757,657
Int. Cl. H04b *9/00;* **G02f** *1/16*
U.S. Cl. 250—199 **5 Claims**



An electro-optical telemetry system wherein a light beam is modulated with high frequency information signals for transmission to a receiver that includes a photodetector for transducing the modulated light beam to electric information signals, a frequency filter connected to the output of the photodetector for extraction of low frequencies that are induced in the transmitted beam by atmospheric turbulence, and a light modulator at the receiver input to which the extracted low frequencies are negatively fed back to substantially eliminate the atmospherically induced variations in the received light beam.

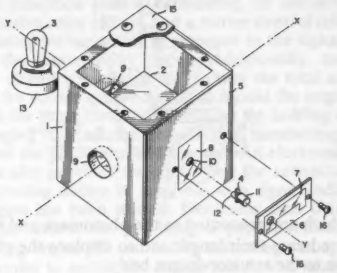
3,569,716

OPTO-ELECTRONIC LIQUID LEVEL SENSOR FOR MAINTAINING A STABLE REFERENCE

Virgil Dennis Lewis, Beltsville, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed June 3, 1968, Ser. No. 734,063
Int. Cl. G01j *1/32*
U.S. Cl. 250—218 **5 Claims**

An opto-electronic sensor which maintains a stable condition relative to a reference. The sensor utilizes a mercury pool contained in a steel box having relatively small dimensions. Holes in each of the four sides of the box each contain an optical glass window. Photosensitive diodes are mounted outside the windows on two adjacent sides of the box and light sources are similarly mounted on the remaining two sides so that a light source is opposite each diode. The mercury pool is adjusted to a height so as to partially block the light going from each light source to its respective diode. Tilting the box along one axis or the other will increase or decrease the light reaching one or the other of the photosensitive diodes and vary the diode electrical output which can be used to control a self-leveling servo control system.

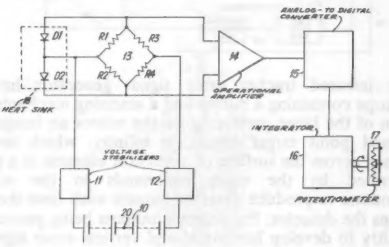


3,569,717

RADIATION MEASURING AND INTEGRATING DEVICE

Oluyinka A. Awojobi, and Paul M. Dunachie, Glasgow, Scotland, assignors to D-Mac Limited

Filed Oct. 14, 1969, Ser. No. 866,278
Claims priority, application Great Britain, Nov. 7, 1968, 52,754/68
Int. Cl. H01j *39/12;* **G01j** *1/42*
U.S. Cl. 250—209 **7 Claims**



A radiation measuring device applicable to the measurement of direct radiation incident over a time interval and particularly applicable to the measurement of the net radiation, e.g. solar radiation, absorbed by a surface over a time interval. In the latter application, radiation sensitive devices are exposed to direct radiation and radiation reflected from the surface, respectively. A bridge circuit becomes unbalanced and supplies a signal to an analogue-digital converter. The output of the converter is integrated in an integrator to give a signal proportional to the net radiation absorbed over a time interval.

3,569,718

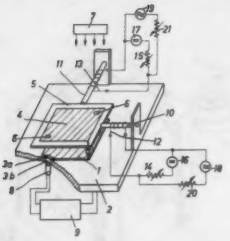
DEVICE FOR THE FINE ADJUSTMENT OF PHOTOMASKS WITH RESPECT TO SEMICONDUCTOR ELEMENTS

Manfred Borner, Ulm, (Danube), Germany, assignor to Telefunken Patentverwertungsgesellschaft m. b. H., Ulm, (Danube), Germany

Filed June 28, 1967, Ser. No. 649,593
Claims priority, application Germany, July 1, 1966, T31500
Int. Cl. G01n *21/30*
U.S. Cl. 250—201 **7 Claims**

In the manufacture of semiconductor devices with the aid of photomasks, the correct position of the photomask with

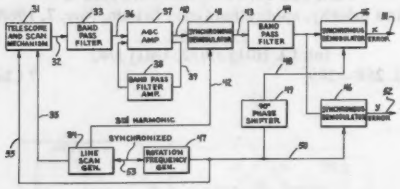
respect to the semiconductor body to be processed is adjusted by the use of rod-shaped electromechanical transducers which are connected to the photomask and which, when energized vary their length and so displace the photomask in relation to the semiconductor body.



3,569,719
INFRARED TRACKER ERROR SIGNAL GENERATION AND PROCESSING SYSTEM

Eugene H. Dryden, San Marino, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 10, 1968, Ser. No. 698,096
Int. Cl. G01j 1/20
U.S. Cl. 250—203 **6 Claims**

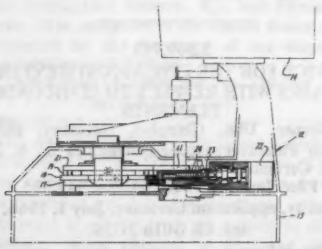


An infrared tracker error signal generator having a telescope containing a mirror and a scanning mechanism, the action of the latter producing on the mirror an image of an assumed point target object at infinity, which image is scanned across the surface of a detector element in a pattern prescribed by the input commands to the scanning mechanism to produce detector outputs each time the image crosses the detector, the detector outputs being processed in circuitry to develop horizontal and vertical error signals for the tracker system to bring the center of scan to the center of the detector band in the telescope.

3,569,720
PHOTOELECTRIC LIMIT SENSING ASSEMBLY AND SYSTEM

Thorbjoern Roland Fredriksen, Sunnyvale, Calif., assignor to Electroglas, Inc., Menlo Park, Calif.

Filed Jan. 6, 1969, Ser. No. 789,281
Int. Cl. G06m 7/00
U.S. Cl. 250—219 **7 Claims**

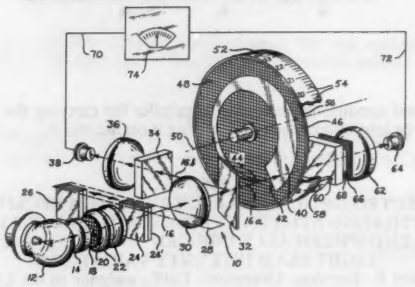


Photoelectric limit sensing assembly and system having photoelectric elements and logic arranged so that movement beyond a predetermined acceptable region is detected and which only permits movement in the proper direction to bring movement into the acceptable region.

3,569,721
MEASURING BILIRUBIN IN BLOOD USING LIGHT AT TWO WAVELENGTHS

Herbert E. Goldberg, Concord, and Michael L. Polanyi, Webster, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Jan. 13, 1969, Ser. No. 790,551
Int. Cl. G01n 2/26
U.S. Cl. 250—218 **10 Claims**

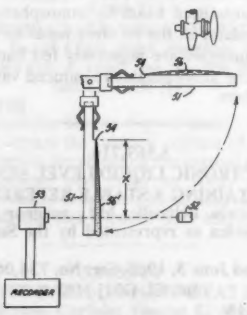


Measuring the concentration of bilirubin in unmodified blood serum by defining the light transmission of a microsample of the serum in terms of bilirubin concentration at two preselected specific wavelengths of light wherein the effect of hemoglobin on transmission through the sample is eliminated.

3,569,722
APPARATUS FOR MEASURING THE THICKNESS OF A LIQUID DRAINING FROM A VERTICALLY DISPOSED SURFACE

Costel D. Denson, Schenectady, N.Y., assignor to General Electric Company

Original application June 5, 1968, Ser. No. 734,739, now Patent No. 3,495,445, dated Feb. 17, 1970. Divided and this application June 25, 1969, Ser. No. 836,396
Int. Cl. G07n 23/12
U.S. Cl. 250—218 **10 Claims**

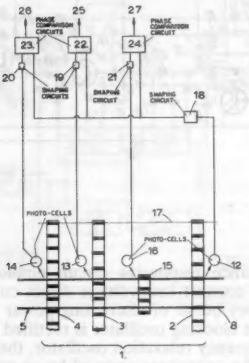


An apparatus for determining the thickness of a draining liquid film having a wave energy source and a wave energy detector. The liquid is supported on a vertical substrate between the wave energy source and the detector. The energy transmitted through the liquid at any time is a function of the thickness of the film.

3,569,723
MEASURING APPARATUS FOR DETERMINING THE RELATIVE POSITION OF TWO COMPONENTS

David G. Brake, Welwyn Garden City, and Geoffrey Thompson, Letchworth, England, assignors to British Aircraft Corporation Limited, London, England

Filed July 29, 1968, Ser. No. 748,344
Claims priority, application Great Britain, Aug. 4, 1967, 35876/67
Int. Cl. G01d 5/34
U.S. Cl. 250—231 20 Claims

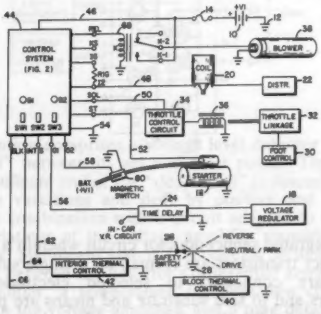


Measuring apparatus comprising a scale and a reading head movable over the scale. The scale includes a reference pattern track of a reference number of pattern line pitches per unit length and one or more measurement pattern tracks having a number of pattern line pitches per such unit length equal to the reference number plus a small fraction of a pitch, with the fractions being arranged in a decreasing size progression when there is more than one measurement pattern track. The reading head comprises an index for scanning the pattern tracks on the scale, the index having a pattern of approximately the reference number of pattern line pitches per such unit length to form alternating fringes between the index pattern and the scale patterns. Means are provided for individually detecting the variation of fringes formed by the cooperation of the index pattern and each of the pattern tracks on the scale.

3,569,724
ENGINE STARTER AND TEMPERATURE CONTROL SYSTEM

Andrew Kuehn, III, St. Paul, Minn., assignor to Systematics, Inc., St. Paul, Minn.

Filed Sept. 2, 1969, Ser. No. 854,631
Int. Cl. F02n 11/08
U.S. Cl. 290—37 15 Claims

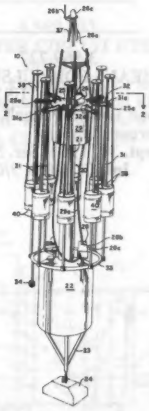


An improved automatic engine starter and control system is described, wherein the control system utilizes temperature sensing apparatus for determining when an engine should be started for warming either the engine, or some controlled area. The automatic starter system utilizes an electronic control system having a holding circuit for providing standby power, an indicator circuit for indicating the selection of the temperature condition that is controlling, an electronically controlled master relay circuit, and a starter control relay circuit for initiating starter action in response to the signals provided from the master relay circuit. Additionally, an electronic timer circuit is provided for limiting the total amount of time that the starter will be activated should the engine fail to start, with the timer circuit deactivating the holding circuit and disengaging the starter should the nonstarting time period exceed the predetermined amount. An electronic control circuit is also provided for controlling the activation of a heating or cooling device in response to a signal indicating that the engine has been started. Electronic time delay circuits are also shown for providing a predetermined time delay following engine die-out before restarting can again be initiated in order to assure the engine has slowed nearly to a stop for preventing damage to the starting mechanism. An electronic safety switch is also described for completely deactivating the control system in the event the gear selection lever is moved out of the neutral or park position. Circuitry is also described for determining when the engine is self-running for removing control of the automatic control system. Circuits are also described for controlling the throttle setting during starting and idling periods.

3,569,725
WAVE-ACTUATED POWER GENERATOR-BUOY

Edgar N. Rosenberg, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 9, 1970, Ser. No. 9,709
Int. Cl. F03b 13/12
U.S. Cl. 290—53 7 Claims



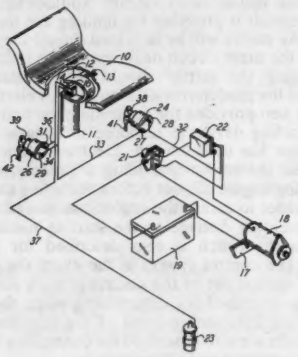
An oceanographic buoy having a self-sustaining power supply includes an elongate framework provided with a flotation section and a ballasting section predetermined to maintain the buoy in a vertical position. A pressure chamber carried on the buoy is fed water by a plurality of equaldistantly, circumferentially disposed pumping assemblies and passes the water, under pressure, to a hydroelectric transducer driving a transmitter. The transmitter relays information, representative of a monitored phenomena, or, merely radiates high energy electromagnetic signals enabling the precise location of the buoy by a remotely disposed tracking station. High reliability stems from the overall simplicity of the oceanographic buoy which is primarily dependent on the configuration and orientation of the several pumping assemblies that individually require a minimum amount of sealing and linkage elements.

3,569,726

IGNITION SAFETY SYSTEM FOR GARDEN TRACTORS

Morris W. Reid, and Harry E. Kline, Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed June 26, 1969, Ser. No. 836,916
Int. Cl. H02g 3/00
U.S. Cl. 307—10 4 Claims



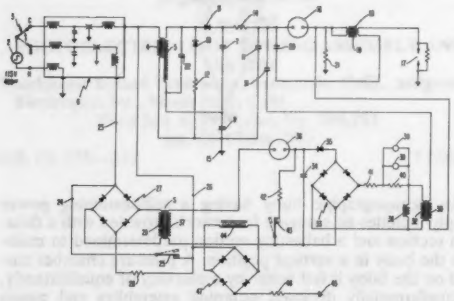
An ignition safety system for garden tractors, with an electric circuit including a battery, a generator, and an ignition coil. A plurality of electric switches are connected in the circuit, and a weight-responsive tractor seat has one of the switches thereunder for closing when the operator sits in the seat. There are two more of the said switches which are manually operated, preferably by keys, with one of the two switches being in series connection with the seat-operated switch, and with the other of the two switches being in parallel connection with the seat-operated switch to electrically bypass the seat-operated switch, all at the discretion of the operator.

3,569,727

CONTROL MEANS FOR PULSE GENERATING APPARATUS

Rattan Aggarwal, and Louis H. Segall, Sidney, N.Y., assignors to The Bendix Corporation

Filed Sept. 30, 1968, Ser. No. 763,569
Int. Cl. H03k 3/00
U.S. Cl. 307—106 19 Claims



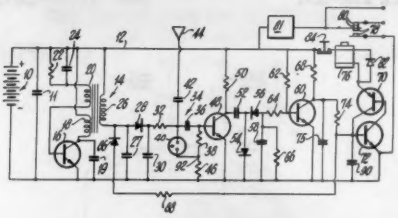
A condenser discharge type electrical pulse generating circuit, such as for a combustion engine ignition system, in combination with means for automatically disabling said circuit after operation for an interval within a predetermined range, the combination being such that the disabling means may be selectively bypassed and such that recycling of said means may be effected following an interruption of power input.

3,569,728

CAPACITANCE-RESPONSIVE CIRCUIT

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation

Filed Apr. 16, 1969, Ser. No. 816,648
Int. Cl. H01h 35/00
U.S. Cl. 307—116 10 Claims



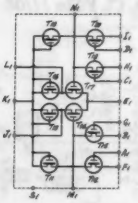
A capacitance responsive circuit employing a blocking oscillator to convert low voltage direct current power into high frequency bursts of alternating power is disclosed. The output of the blocking oscillator is rectified and then applied to a low-frequency relaxation oscillator, the output of which varies with the capacitance sensed by an antenna connected to one of its branches. The output of the low-frequency relaxation oscillator controls the energization of a relay by means of intermediate solid state switching circuitry. A latching circuit maintains the relay in an energized state until a reset button is manually actuated. The blocking oscillator consumes only a small amount of standby power so that the device can be operated continually.

3,569,729

INTEGRATED FET STRUCTURE WITH SUBSTRATE BIASING MEANS TO EFFECT BIDIRECTIONAL TRANSISTOR OPERATION

Isamu Washizuka, Osaka-shi; Hitoshi Hanahara, and Kunio Yoshida, Yamatokoriyama-shi, Japan, assignors to Hayakawa Denkikogyo Kabushiki Kaisha, Osaka-shi, Osaka-Fu, Japan

Filed June 27, 1967, Ser. No. 649,248
Claims priority, application Japan, July 5, 1966, 41/44305
Int. Cl. H03k 19/08
U.S. Cl. 307—205 4 Claims

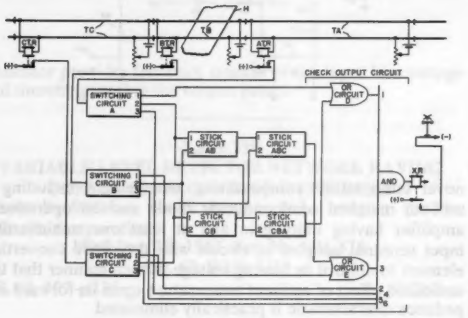


An integrated semiconductor circuit wherein a plurality of field effect transistors are formed on a single substrate, terminals are connected to selected electrodes of said transistors and to said substrate and means are provided for biasing the substrate relative to the electrodes of the transistors so that modifying the biasing of the substrate relative to the transistor electrodes will enable bidirectional operation of the transistors.

3,569,730
LOGIC CIRCUITRY FOR RAILROAD CROSSING SYSTEMS

Arthur W. Wetmore, Ormond Beach, Fla., assignor to General Signal Corporation, Rochester, N.Y.

Original application Oct. 23, 1969, Ser. No. 677,139, now Patent No. 3,471,687. Divided and this application May 21, 1969, Ser. No. 844,229
Int. Cl. H03k *19/20*
U.S. Cl. 307—216 8 Claims

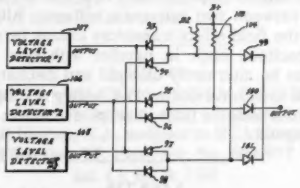


Logic circuitry utilizing transistorized switching circuits arranged to provide a check on their own proper operation. Each switching circuit monitors a single track section and provides three electrical outputs indicating respectively, train absence, train presence, and the proper functioning of the device itself. These outputs are fed into other transistorized circuit elements consisting of stick circuits, AND circuits and OR circuits logically arranged so as to activate a motorist warning system when a train is approaching a crossing from either direction, when a train is traversing the crossing, or when a circuit failure occurs and to deactivate the warning system as soon as a train has cleared the crossing.

3,569,731
VOLTAGE LEVEL DETECTOR

Horacio E. Gavira, Lakewood, Calif., assignor to the United States of America as represented by the Secretary of the Air Force

Filed Aug. 20, 1968, Ser. No. 754,062
Int. Cl. G06f *11/08*
U.S. Cl. 307—219 3 Claims

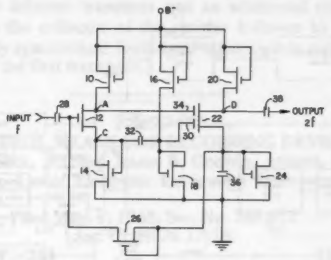


The invention comprises a voltage level detector having a "dead band" between its set and reset points. The critical level or significant end of the "dead band" is desensitized to temperature variations and drift by positive and negative feedback in combination with a circuit adapted to compensate for variations of the voltage amplifier transistor transconductance. Significant system components include a feedback circuit between the detector's differential amplifier and voltage amplifier, a temperature compensation circuit associated with the voltage amplifier, and a time delay circuit. The invention also comprehends a voltage monitoring system employing three such voltage level detectors in combination with a "majority voting" logic circuit.

3,569,732
INDUCTANCELESS IGFET FREQUENCY DOUBLER

Alton O. Christensen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,848
Int. Cl. H03k *21/00*
U.S. Cl. 307—220 8 Claims

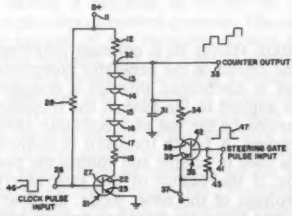


An IGFET frequency doubler is provided by connecting across a bias voltage source a two-gate output IGFET in series with one or more resistance-connected IGFET's. The two gates of the output IGFET are connected, respectively, to the source and drain electrodes of an input IGFET connected in series with, and between, a pair of resistance-connected IGFET's across the bias voltage source. By applying an alternating-current input signal to the gate electrode of the input IGFET, the "on" resistance of the input IGFET is varied. By proper choice of the operating points of the IGFET devices, any departure of the input IGFET "on" resistance in either direction from a predetermined center value results in a decrease of the "on" resistance of the output IGFET. Consequently, an output signal having double the frequency of the input signal appears at the junction between the output IGFET and the bias IGFET in series with it.

3,569,733
REVERSIBLE COUNTER CIRCUIT UTILIZING TUNNEL DIODES

Richard C. Weischedel, Camillus, N.Y., and Robert A. Lux, Toms River, N.J., assignors to General Electric Company

Filed Dec. 28, 1967, Ser. No. 694,282
Int. Cl. H03k *23/16*
U.S. Cl. 307—222 6 Claims



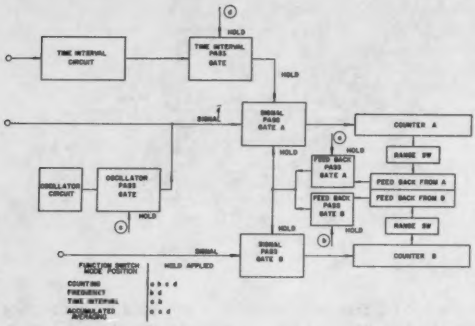
A reversible counter circuit (sometimes called an up-down counter) is disclosed, utilizing a plurality of tunnel diodes connected in series with an upcount pulse switch in a constant current path, in parallel with a count capacitor. A downcount pulse switch is connected, in a constant current path, across the count capacitor. The voltage charge on the count capacitor shifts up or down in incremental steps in response to the occurrence of the upcount pulses and the downcount pulses, and the proper number of tunnel diodes automatically turn "on," upon the occurrence of each count pulse, so as to fix the voltage on the count capacitor at accurately determined values representative of the counts. The count voltage thus always varies in accurately fixed incremental steps and is immune to any cumulative errors in count values.

3,569,734

PULSE AND FREQUENCY COUNTER

Gary L. Samuelson, and David C. Allion, Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Mar. 27, 1969, Ser. No. 811,021
Int. Cl. H03k 21/16
U.S. Cl. 307—225 5 Claims



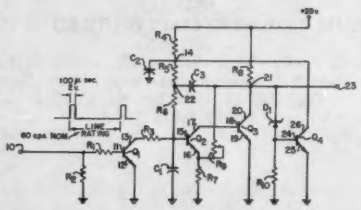
A compact, multipurpose counter is constructed by interconnecting two, solid state, decimal counters with a solid state switching circuit constructed of inverting NOR gates.

3,569,735

CONSTANT AMPLITUDE SAWTOOTH GENERATOR

Wendell E. Lavender, Ridgefield, Conn., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 24, 1968, Ser. No. 762,046
Int. Cl. H03k 4/50
U.S. Cl. 307—228 4 Claims



This invention relates to a constant amplitude sawtooth generator. The circuit of the generator comprises a charging capacitor that is discharged through a transistor when an input pulse is applied to the base of the transistor. The sawtooth is linearized by the use of a bootstrap circuit comprising two transistors. A fourth transistor in conjunction with a zener diode is used to sample and control the peak output of the generator. If the output of the generator exceeds the breakdown voltage of the zener diode, the fourth transistor will conduct and lower the charging voltage of the charging capacitor.

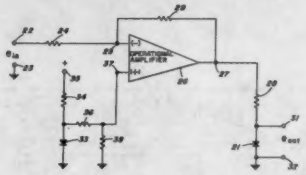
3,569,736

TEMPERATURE COMPENSATED LOGARITHMIC CONVERTER UTILIZING THE EXPONENTIAL TRANSFER FUNCTION OF A SEMICONDUCTOR DIODE JUNCTION

John Tschinkel, Great Neck, N.Y., assignor to the United States of America as represented by the Secretary of the Navy

Filed Nov. 29, 1968, Ser. No. 780,136
Int. Cl. G06g 7/12
U.S. Cl. 307—230 2 Claims

A logarithmic converter circuit for providing an output voltage proportional to the logarithm of an applied input voltage, having novel temperature compensation means for stabilizing the effects of ambient temperature upon a semiconductor diode utilized as the nonlinear converting element. The converter is comprised of a PN-junction semiconductor diode arranged to utilize its exponential forward impedance characteristic for providing the desired logarithmic transfer function in a manner well known in the art, and a



novel temperature compensating arrangement including a second, matched semiconductor diode and an operational amplifier having unity gain and at least one noninverting input terminal coupled in circuit with the diode converting element to control its biasing voltage in such manner that the undesired effect of ambient temperature upon its forward impedance characteristic is practically eliminated

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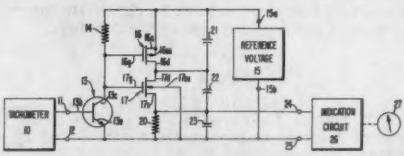
3,569,737

FREQUENCY TO D-C CONVERTER

Douglas M. Bauer, Danvers, and Gerfried M. Gozemba, Marblehead, Mass., assignors to General Electric Company

Filed July 17, 1968, Ser. No. 745,421
Int. Cl. H03k 5/20
U.S. Cl. 307—233 5 Claims



A frequency to D-C converter. A frequency input signal alternately switches complementary field effect transistor gate electrodes between two reference voltages. Alternate conduction of the field effect transistors causes two series-connected capacitors, each in parallel with one field effect transistor, to be alternately charged and discharged. Charging currents are converted to D-C voltages proportional to frequency in a resistive filter network and are coupled to an indication circuit.

3,569,738

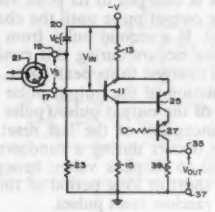
THRESHOLD SENSE AMPLIFIER FOR SMALL SIGNAL INPUT

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 8, 1968, Ser. No. 765,875
Int. Cl. H03k 5/20
U.S. Cl. 307—235 5 Claims

A transistor is responsive to small bipolar pulses superimposed on a relatively large common mode signal. An input network for the transistor rejects the common mode signal, and a biasing circuit biases the transistor in saturation at an operating point near its saturation breakpoint. The transistor amplifies and threshold detects the small input pulses and provides output pulses having a high signal-to-noise ratio.

The output pulses are direct-coupled from a DC voltage source, so that DC restoration is not required. Another



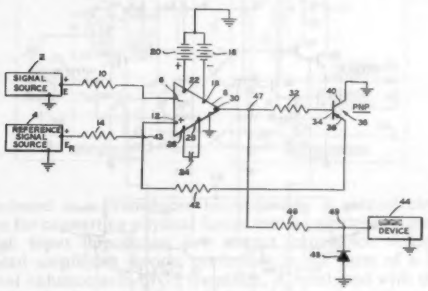
transistor provides feedback control of the input bias voltage and thereby stretches the output pulses.

3,569,739

VARIABLE LEVEL DETECTOR NETWORK HAVING CONSTANT PERCENTAGE HYSTERESIS

Steven D. Stolman, North Bergen, N.J., assignor to The Bendix Corporation

Filed Dec. 18, 1967, Ser. No. 691,376
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **5 Claims**



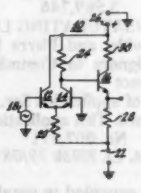
A level detector network including means for comparing an unknown signal to a variable reference signal and switching means connected to the comparing means for affecting said means so that the output therefrom is at one logic level when the unknown signal is greater than the reference signal and at another logic level when the unknown signal is less than the reference signal. The device has a constant percentage voltage hysteresis, and which hysteresis is independent of the reference signal.

3,569,740

SIGNAL TRANSLATING SYSTEM PROVIDING AMPLIFICATION AND LIMITING

Jack Avins, Princeton, N.J., assignor to RCA Corporation

Filed Dec. 27, 1966, Ser. No. 604,977
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **11 Claims**



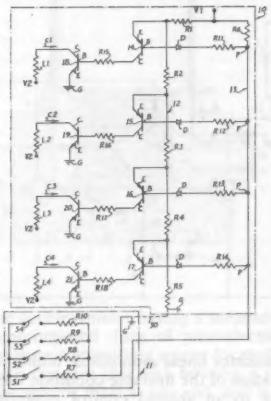
A limiter-amplifier circuit including first and second emitter coupled transistors and an emitter follower (third) transistor having its input direct coupled to the output (collector) of the second transistor. The first transistor is operated as a base input, common collector stage while the second transistor is operated as an emitter input, common base stage. A resistor connected in common to the emitters of the first and second transistors is substantially one-half the value of a resistor connected to the collector of the second transistor. Output load resistance is coupled to the emitter of the emitter follower transistor and an additional resistor is coupled to the collector of the emitter follower to provide substantially symmetrical limiting of input signals supplied to the base of the first transistor.

3,569,741

CONTROL MEANS FOR RECORDING DEVICE

Fred C. Bolick, Jr., and James B. Godwin, Atlanta, Ga., assignors to Lanier Electronic Laboratory Incorporated, Atlanta, Ga.

Filed Mar. 9, 1968, Ser. No. 727,877
Int. Cl. H03k *17/30*
U.S. Cl. 307—244 **11 Claims**



A control means for controlling the operation of a recording device having a plurality of modes of operation in response to a plurality of control currents. The control means provides for control of the recording device from one or more operating stations and the control means includes a plurality of current means for providing a plurality of control currents in response to a plurality of potential differences between a plurality of first voltages provided by a circuit means and a variable second voltage provided by a selecting means. The variable second voltage is selectively varied at the recording device from an operating station with substantially no flow of current between the recording device and the operating station and with a minimum number of wires required between the recording device and the operating station. Thus, the control means is reliable because it is independent of fluctuations of current between a recording device and an operating station and is relatively inexpensive because of the small number of wires required between a recording device and an operating station.

3,569,742

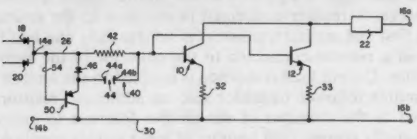
TRANSISTOR SWITCHING CIRCUIT

George F. Schroeder, West Wayne, N.J., assignor to General Precision Systems Incorporated, Little Falls, N.J.

Filed Aug. 23, 1968, Ser. No. 754,841
Int. Cl. H03k *17/60*
U.S. Cl. 307—254 **6 Claims**

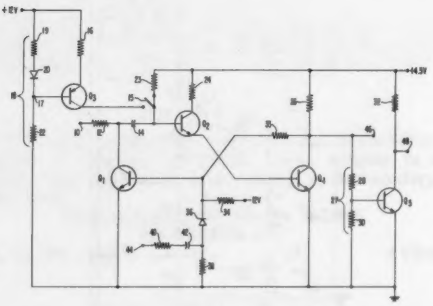
A transistor switching circuit having a capacitor connected

between a switching transistor and an input. A second transistor is provided to connect the capacitor to discharge in



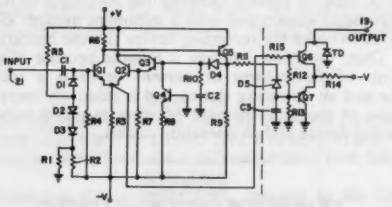
the reverse direction through the emitter base junction of the switching transistor to decrease its turning off time.

3,569,743
LINEAR MONOSTABLE MULTIVIBRATOR
Lee R. Baessler, Torrance, Calif., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed July 1, 1968, Ser. No. 741,708
Int. Cl. H03k *3/26*
U.S. Cl. 307—273 **4 Claims**



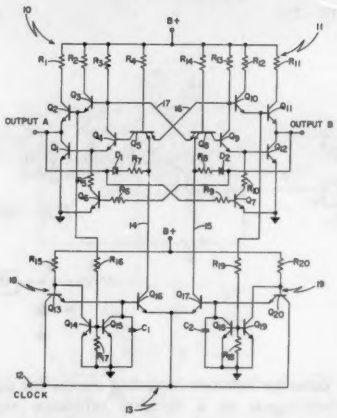
A three transistor linear monostable multivibrator in which the time duration of the unstable condition thereof is linearely responsive to an applied control potential from which value a capacitor is charged from a constant current source to the potential at which the multivibrator switches to its stable condition.

3,569,744
RESETTABLE MONOSTABLE PULSE GENERATOR
Norman M. Garrahan, Silver Spring, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Aug. 30, 1968, Ser. No. 756,511
Int. Cl. H03k *3/284*
U.S. Cl. 307—273 **12 Claims**



This disclosure describes a resettable monostable pulse generator including a charge rundown-timing circuit. The charge rundown-timing circuit includes a capacitor that is charged to a peak value by a random pulse from a constant amplitude pulse source. After being charged, the capacitor immediately starts to discharge toward zero. In addition, an output pulse generator starts to generate an output pulse as soon as the capacitor is charged to its peak value and continues to generate the output pulse until the charge drops to a predetermined level. If a second pulse from the constant amplitude pulse source occurs during this rundown period, the capacitor is again charged to its peak value. This "reset" pulse prevents termination of the output pulse and recycles the termination time of the output pulse (pulse width) to be measured from the inception of the last reset pulse. Each time a "reset" pulse occurs during a rundown period, the capacitor is recharged to its peak value; hence, the output pulse can exist for a short or long period of time depending on the occurrence of random reset pulses.

3,569,745
TRANSISTOR LOGIC CIRCUIT
John J. Kardash, Acton, Mass., assignor to Sylvania Electric Products Incorporated
Filed Nov. 6, 1968, Ser. No. 773,916
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **12 Claims**

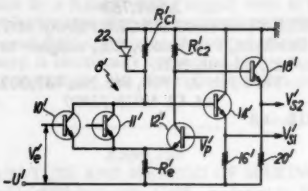


Bistable transistor-transistor logic circuit in which the turn-on and turnoff times of a saturated output transistor are decreased by the operation of a bypass circuit which diverts a portion of the output transistor driving current away from the transistor after it has been driven into saturation. The bistable logic circuit is triggered from one state to the other by a clock pulse applied to a control circuit having an input transistor connected directly to the clock pulse terminal and to a capacitance. During the clock pulse the input transistor conducts and charges the capacitance. Upon termination of the clock pulse the stored charge is employed to initiate switching.

3,569,746
HIGH SPEED NONSATURATING LOGIC CIRCUIT
Jacques Lacour, Grenoble, and Pierre Rousseau, Sayssinet-les-Iles, France, assignors to Commissariat A L'Energie Atomique, Paris, France
Continuation-in-part of application Ser. No. 630,722, Apr. 13, 1967, now abandoned. This application Feb. 6, 1970, Ser. No. 007,411
Int. Cl. H03k *19/08*
U.S. Cl. 307—296 **3 Claims**

A clamping diode is provided in parallel with the load resistance located in the common collector circuit of the input transistors of a conventional emitter coupled nonsaturating logic circuit for OR/NOR operation.

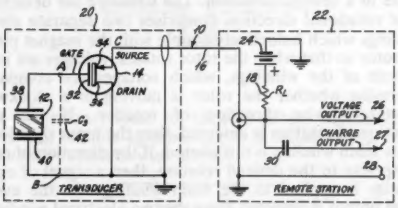
In a modified embodiment using several input blocks a clamping diode is also provided in parallel with the load resistance located in the collector circuit of the bias transistors. The modified embodiment may be used as half adder.



3,569,747
PIEZOELECTRIC TRANSDUCER

Vernon H. Siegel, Clarence, N.Y., assignor to Kistler Instrument Corporation

Continuation of application Ser. No. 471,934, July 14, 1965, now abandoned. This application July 9, 1968, Ser. No. 746,700
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **8 Claims**

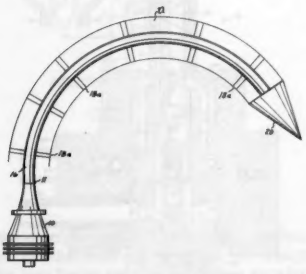


Disclosed is a transducer incorporating a piezoelectric device for converting physical forces into an electrical signal. A high input impedance, low output impedance voltage operated amplifying device, preferably in the form of a P-channel enhancement MOS transistor, is combined with the piezoelectric element and supplied over a conventional single coax or two-wire cable from a remote power supply. The MOS transistor may be connected to the coaxial cable through a junction transistor.

3,569,748
SONIC CURVED TRANSMISSION LINE UTILITY DEVICE

Hildegard M. Minchenko, Reynoldsburg; Robert C. McMaster, and Fred A. DeSaw, Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed June 13, 1969, Ser. No. 833,100
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 **6 Claims**

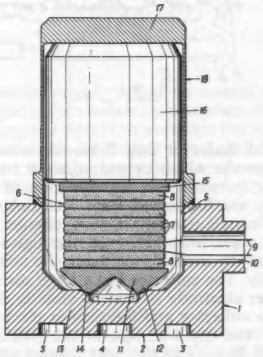


This invention relates generally to electromechanical transducers having a high-Q and an improved structural arrangement capable of delivering from a source—and for given lengths—extremely high power outputs with only a minimum power loss. Specifically, the transmission of ultrasonic energy is through extended curved transmission lines. At the end of the transmission line opposite to that of the power source is coupled a work function utilization device. Theoretical data is correlated with actual data for different conditions in the transmission of ultrasonic energy through extended curved transmission lines.

3,569,749
PIEZOELECTRIC ACCELEROMETER WITH AN INTERNAL SPHERICAL BEARING

Rudolf Zeiringer, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Nov. 3, 1969, Ser. No. 873,319
Claims priority, application Austria, Nov. 6, 1968, A10806/68
Int. Cl. H04r 17/00
U.S. Cl. 310—8.4 **6 Claims**

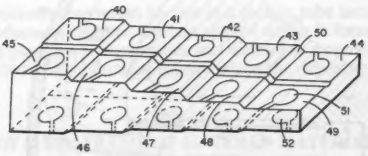


A piezoelectric accelerometer having a measuring element consisting of superimposed discs of piezoelectric material and a convex pressure-transmitting spacer located between a seismic mass and a concave seat on a housing, a prestressing element abuts the seismic mass at one end, and is secured to the housing at its other end.

3,569,750
MONOLITHIC MULTIFREQUENCY RESONATOR

William D. Beaver, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 29, 1968, Ser. No. 779,909
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 **4 Claims**

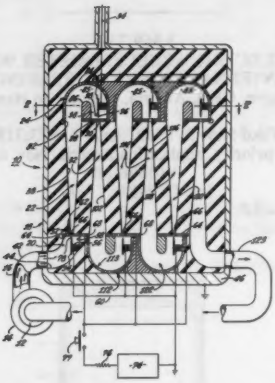


A multifrequency resonating device comprising a single, piezoelectric quartz crystal plate having a plurality of different thickness plateaus formed thereon and separated, one from the other, by sections of beveled surface areas which create acoustic impedance mismatches between the plateaus. Each plateau has coated upon both sides thereof conductive electrodes and suitable terminal leads extending therefrom. Each plateau is resonant at a different frequency without the necessity of separate crystal blank holders or separate temperature compensation circuits.

3,569,751
HIGH VOLTAGE GENERATOR

Lothar H. Ruhnke, Honolulu, Hawaii, assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 5, 1967, Ser. No. 688,112
Int. Cl. H02n 3/00
U.S. Cl. 310—10 13 Claims

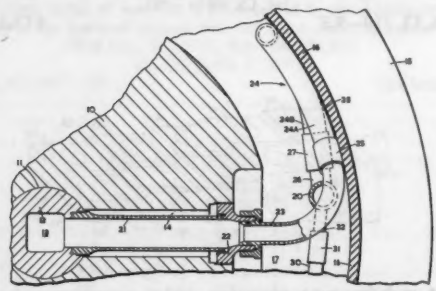


An ionized, dielectric fluid flows into a series of ion transport passageways which extend adjacent to each other and which taper outwardly in the direction of fluid flow. The passageways are fabricated from material which is slightly electrically conductive to preclude charge build up on the passageway walls. Ions arriving at the high voltage electrode are collected by collector without the use of an external power supply. The collector has a large surface area relative to an emitter electrode so that an electric field is developed between the collector and the emitter electrode for producing ions of the opposite sign in the fluid. The oppositely ionized fluid flows into the next passageway where the ion collection process is repeated. A high potential which builds up on the emitter electrode renders the device useful as a high voltage generator.

3,569,752
LIQUID-COOLED DYNAMOELECTRIC MACHINE ROTOR

John Morgan Tomlinson, Stafford, England, assignor to The English Electric Company Limited, London, England

Filed Aug. 21, 1969, Ser. No. 851,927
Claims priority, application Great Britain, Aug. 21, 1968, 40017/68
Int. Cl. H02k 9/19
U.S. Cl. 310—54 6 Claims

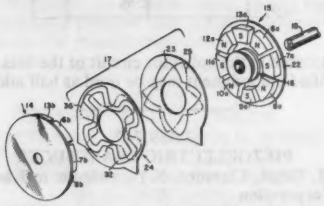


The specification describes a dynamoelectric machine rotor in which cooling liquid is conveyed to and from the rotor windings by way of ducts in the rotor shaft ends and a plurality of cooling liquid manifolds, each such manifold is disposed in the annular space between the outer surface of the rotor shaft end and the inner faces of the rotor winding end turns and is supported against packing members supported by the rotor winding end turns. Flexible elbow pipes which convey the liquid between the shaft end and the rotor winding end turns accommodates for the relative movement between the shaft end and the end turns.

3,569,753
SELF-STARTING SINGLE PHASE MOTOR

Jirair A. Babikyan, Providence, R.I., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 2, 1968, Ser. No. 742,002
Int. Cl. H02k 11/00
U.S. Cl. 310—68 13 Claims

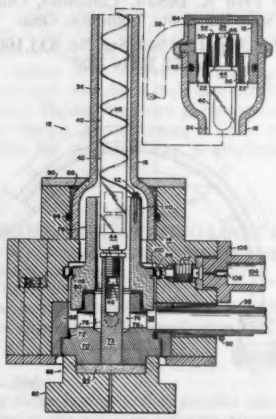


A permanent magnetic motor is provided having main and angularly displaced auxiliary windings and means for detecting the direction of rotation of the motor's permanent pole rotor and for producing control signals to cause the motor to rotate in a desired direction. The structure for detecting the rotor rotational direction comprises two separate electrical windings which inductively couple with the magnet pieces of the rotor so that when the rotor rotates, voltages are induced in both of the windings, which voltages are compared to determine whether the rotor is moving in a clockwise or counterclockwise direction of rotation. If the desired direction of rotation is detected, then the input signal applied to the main winding is not altered. If the direction of rotation is opposite to the desired rotation, then a signal of opposite polarity is applied to the main windings. In the event no signal output is detected from the two electrical windings, indicating that the motor did not start, then a pulse of either polarity is applied to the auxiliary winding, such that it initiates rotation, and then direction is sensed and controlled, as above. Thus, the motor may be started and once started may be rotated in a selected direction of rotation.

3,569,754
FLASH SOURCE

Richard G. Priebe; Harold L. Neuman, and Michael L. Rishton, Reading, Mass., assignors to Dyonics, Inc., Stoneham, Mass.

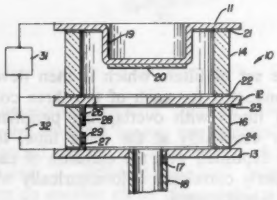
Filed June 19, 1968, Ser. No. 738,158
Int. Cl. H01j 1/02
U.S. Cl. 313—12 10 Claims



A flash source comprises a mutually spaced lamp and lamp shield mounted between a lamp socket and an electrode head

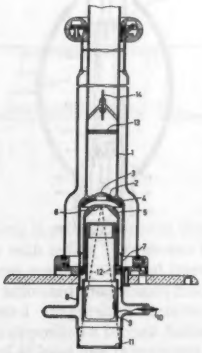
each having perforations for circulating cooling fluid communicating with the space between the lamp and shield. The socket has an insulator upon the surface of which an electrical connection to a helical spring trigger wire is fused and plated. The block supporting the socket also resiliently supports an external fluid conductor connected to the electrode head. The lamp is electrically connected by means of spring contact fingers engaging the electrode head inwardly of its perforations.

3,569,755
VACUUM TUBE AND METHOD OF MAKING IT
Lowell A. Noble, Hillsborough, Calif., assignor to Varian Associates
Filed Aug. 9, 1960, Ser. No. 48,504
Int. Cl. H01j *17/00*
U.S. Cl. 313—61 **14 Claims**



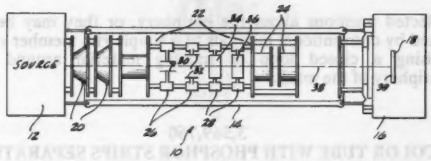
This invention relates to vacuum tubes, particularly to tubes having vacuum-tight envelopes in which energized ions form nuclear reactions with matter.

3,569,756
ION SOURCE HAVING A PLASMA AND GRIDLIKE ELECTRODE
Otto Reifenschweiler, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of application Ser. No. 480,416, Aug. 17, 1965, now abandoned. This application June 28, 1967, Ser. No. 649,543
Int. Cl. H05h *1/02, 1/18*
U.S. Cl. 313—63 **4 Claims**



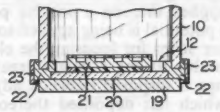
An ion source employing a plasma and a gridlike electrode forming part of the wall of a space in which ions are produced, the ions being accelerated by an accelerating electrode having an aperture the diameter of which is at least equal to half the diameter of the gridlike electrode and the resistance thereof to gas flow is so low that the pressure on each side is equal and so low that the ion flow is saturated. The gridlike electrode has an aperture of at least 1 mm. in diameter through which electrons accelerated against the ion flow may be collected in the plasma space.

3,569,757
ACCELERATION SYSTEM FOR IMPLANTING IONS IN SPECIMEN
George R. Brewer, Malibu, and Charles R. Buckey, Canoga Park, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Oct. 4, 1968, Ser. No. 765,125
Int. Cl. H05h *5/00;* H01i *23/09*
U.S. Cl. 313—63 **1 Claim**



A two-dimensional double deflection system for ion implantation of semiconductor devices comprises deflecting an ion beam in orthogonal directions such that the ion incidence angle is always constant with respect to a target. The beam is first deflected in a direction away from a reference axis and thereafter is redeflected along a path which lies parallel to the reference axis. The second double deflection is similarly performed but orthogonal to the first double deflection. The beam can thus be swept over the entire target for uniform device implantation characteristics.

3,569,758
SEMICONDUCTOR PHOTO-ELECTRIC CONVERTING DEVICES HAVING DEPRESSIONS IN THE SEMICONDUCTOR SUBSTRATE AND IMAGE PICKUP TUBES USING SAME
Shigeharu Horiuchi, Yokohama-shi, and Shigeo Tsuji, Fujisawa-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd, Kawasaki-shi, Japan
Filed Apr. 15, 1969, Ser. No. 816,210
Claims priority, application Japan, Apr. 18, 1968, 43/25,519
Int. Cl. H01j *31/28;* H01i *15/00*
U.S. Cl. 313—66 **12 Claims**

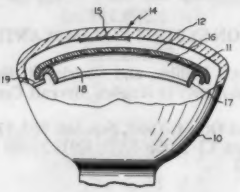


A semiconductor target for use in a pickup tube includes a semiconductor substrate, on one side of which is formed arrays of a plurality of depressions and which has a corresponding number of PN junctions formed along the depressions.

3,569,759
SHADOW MASK FRAME OF SINTERED MATERIAL FOR COLOR TUBES
Jay H. Johnson, Owensboro, Ky., assignor to Kentucky Electronics Inc., Owensboro, KY
Filed July 15, 1968, Ser. No. 744,987
Int. Cl. H01j *31/20, 29/02, 29/06*
U.S. Cl. 313—85 **4 Claims**

A frame that rims and mounts a shadow mask in a color television picture tube is fashioned by casting in integral form, and is preferably sintered from a powder metal base to provide a porous metallic material easily degassed and light in weight. The rim member has a cross section of varying thickness and shape disposed in a general L-shaped pattern

and may have strengthening gussets disposed at predetermined positions about the periphery. Optionally integral mounting members such as brackets may be formed at



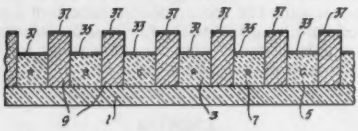
selected positions about the periphery, or they may be affixed by conventional methods to a simple rim member comprising a closed loop of framing material around the periphery of the mask.

3,569,760

COLOR TUBE WITH PHOSPHOR STRIPS SEPARATED BY GUARD BANDS

George F. Fargher, 1697 Webeek Way, Bloomfield Hills, Mich. 48103

Filed Oct. 26, 1967, Ser. No. 678,369
Int. Cl. H01j *29/32, 29/30;* **H04n** *9/26*
U.S. Cl. 313—92 **7 Claims**



The subject matter of this invention is a single gun color TV tube having a means for generating a beam of electrons such as an electron gun, and a means for sequentially receiving red, green, and blue color information in a predetermined order for modulating the electron beam, such as a control electrode. The target area of the tube includes a plurality of spaced red, green, and blue phosphor strips generally vertically disposed and arranged in a predetermined order. On the electron receiving face of each phosphor strip there is deposited a conductive coating. In operation the coatings on the strips corresponding to the color information modulating the beam have applied thereon a positive potential while a lower or negative potential is being applied to the coatings on the other phosphor strips for focusing the electron beam. A guard band preferably having a height greater than that of the phosphor strips is disposed between adjacent phosphor strips, each of which has deposited thereon a conductive coating for receiving a fixed positive potential so as to attract stray electrons generally due to secondary emission.

3,569,761

COLOR PHOSPHOR ELECTROLUMINESCENT SCREEN WITH FILTERS FOR COLOR CATHODE-RAY DISPLAY TUBES

Howard G. Lange, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 4, 1969, Ser. No. 830,288
Int. Cl. H01j *29/26*
U.S. Cl. 313—92 **8 Claims**

The screen of a three gun shadow mask type of color cathode-ray tube is formed of three interleaved sets of filters, with the filters of each set predominantly transmissive of an assigned one of the primary colors green, blue and red. The filters are circular and are of such diameter that their outer peripheral portions overlap, leaving a central section of each filter free to accept a phosphor that emits light of a wavelength for which the associated filter is predominantly transmissive. The screen, in effect, has a multiplicity of elemental picture areas grouped to form color triads and individually surrounded by a filter that attenuates substantially all visible light.

Screening is accomplished with photosensitive coatings that are selectively exposed by actinic energy projected through the shadow mask. Each such exposure develops an

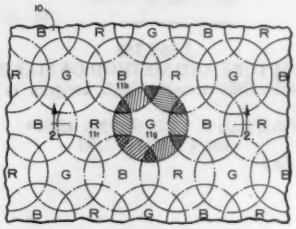


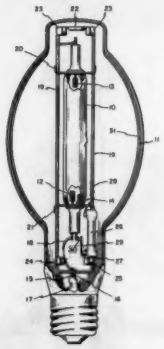
image of one set of filters which is then developed. This process is conducted for each of the three colors to form three sets of filters with overlapping peripheral portions. Thereafter or essentially at the same time, the phosphor materials are deposited with the emission of each phosphor material properly correlated colorimetrically with the filter over which it is superposed.

3,569,762

ELECTRON DISCHARGE LAMPS WITH RARE EARTH PHOSPHOR COATING

Albert K. Levine, Beechhurst, Queens, and Frank C. Palilla, Maspeth, N.Y., assignors to General Telephone and Electronics Laboratories, Inc.

Continuation-in-part of application Ser. No. 334,565, Dec. 30, 1963. This application July 1, 1964, Ser. No. 379,577
Int. Cl. H01j *1/62, 63/04*
U.S. Cl. 313—109 **13 Claims**



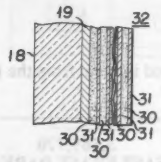
A fluorescent electric discharge lamp comprising (a) an arc tube discharge source, (b) a transparent outer envelope surrounding said discharge source, and (c) a phosphor coating on the inside surface of said outer envelope, said phosphor being composed of a host crystal consisting essentially of a vanadate of a trivalent metal selected from the group consisting of yttrium, gadolinium and lutetium, said host crystal being activated by a trivalent rare-earth element selected from the group consisting of europium and samarium.

3,569,763

MULTILAYER PHOTOCONDUCTIVE DEVICE HAVING ADJACENT LAYERS OF DIFFERENT SPECTRAL RESPONSE

Yuji Kiuchi, Yokohama-shi, Shigeo Tsuji, Fujisawa-shi, and Hiroo Hori, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 7, 1967, Ser. No. 614,436
Claims priority, application Japan, Feb. 14, 1966, Feb. 25, 1966, 41/8334/66;41/11,043;41/11,044;41/11,045
Int. Cl. H01j *31/26, 39/14*
U.S. Cl. 313—65 7 Claims



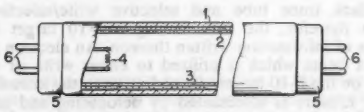
A photoconductive structure includes first layers of a photoconductive material having one spectral response region and second layers of a different photoconductive material having a different spectral response region laminated one on another either alternately or in a predetermined order at least two times, the thickness of each layer being such that light penetrates therethrough, i.e., less than 2 μ. Low-resistivity photoconductive materials can be used to provide multilayer structures having a high sensitivity to a predetermined range of wavelengths of light, for example, to the red-light region and a wide spectral region.

3,569,764

FLUORESCENT LAMPS OF IMPROVED COLOUR RENDITION

Teizo Hanada, Saitama-ken, and Tomohiko Kobuya, Yokohama-shi, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Jan. 30, 1969, Ser. No. 795,150
Claims priority, application Japan, Feb. 3, 1968, 43/6454
Int. Cl. H01j *61/44*
U.S. Cl. 313—109 4 Claims



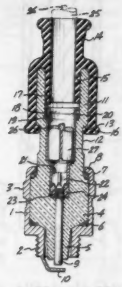
A fluorescent lamp is provided on the inner wall surface of a sealed envelope with a first fluorescent layer including at least one fluorescent material selected from a group consisting of manganese activated magnesium fluorogermanate and manganese activated magnesium arsenate. On the first fluorescent layer is deposited a second fluorescent layer comprising a mixture of at least one fluorescent material selected from a group consisting of magnesium tungstate, calcium tungstate and antimony activated calcium halophosphate and at least one fluorescent material selected from a group consisting of tin activated strontium-magnesium-barium orthophosphate, tin activated calcium-strontium orthophosphate and calcium halophosphate activated with antimony and manganese. The thicknesses of the first layer and the second layer are respectively 21 ± 5 microns and 9 ± 5 microns.

3,569,765

SPARK PLUG WITH CUP LIKE CENTER ELECTRODE

Forest J. Moray, 1513 Brooks St., Seattle, Wash. 98055

Filed Jan. 10, 1969, Ser. No. 790,298
Int. Cl. H01t *13/34*
U.S. Cl. 313—136 9 Claims



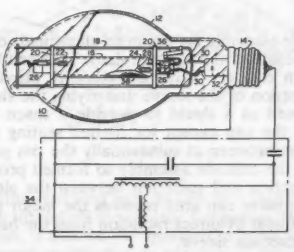
The central electrode of a spark plug has a receptacle cup buried in an open cavity of a ceramic body to receive a plug terminal of a connecting wire. The electrode and cup are made separately and are secured together by a welded joint between the cup and the edges of radial vanes on the inner end of the electrode or by the inner end of the electrode being butt-welded to the bottom of the cup or by the electrode inner end and a portion of the cup interfitting telescopically and being bonded together or by the inner end of the electrode and the cup being connected through interposed sealing material having good electricity-conducting properties.

3,569,766

METAL VAPOR DISCHARGE LAMP

Daniel A. Larson, Cedar Grove, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 3, 1969, Ser. No. 803,925
Int. Cl. H01j *61/18*
U.S. Cl. 313—229 5 Claims



A high-pressure mercury vapor discharge lamp of the additive type which includes in the discharge sustaining fill selected quantities of thallium iodide, dysprosium bromide and mercury and which, while evidencing qualities of luminous efficiency and color rendition comparable to similar lamps, exhibits superior lamp maintenance.

3,569,767

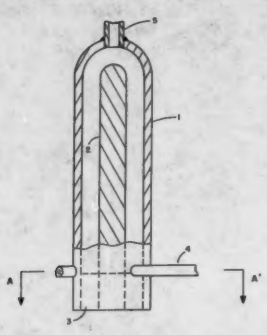
FLOW IONIZATION CHAMBER

Royal H. Benson, 1522 19th Ave. North, Texas City, Tex.

Filed Dec. 7, 1967, Ser. No. 688,836
Int. Cl. H01j *17/26*
U.S. Cl. 313—231 9 Claims

A flow ionization chamber having reduced dead volume and improved peak resolution comprising an outer electrode

having a cylindrical section adjoined at one end to a converging end section and an inner electrode concentrically

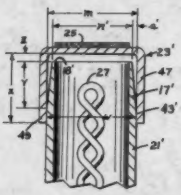


mounted within the outer electrode, means for introducing a gas tangentially to the inside wall of the outer electrode and a gas outlet means located on the converging end section.

3,569,768
CATHODE SLEEVE EFFECTING MAXIMUM HEAT TRANSFER TO TOP OF CATHODE CAP AND MINIMUM TO CAP WALL

David Benda, Geneva, N.Y., assignor to Sylvania Electric Products Inc.

Filed Nov. 21, 1968, Ser. No. 777,571
Int. Cl. H01j *1/94, 19/48*
U.S. Cl. 313—270 **5 Claims**



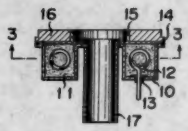
A cathode assembly for use in an electron discharge device wherein one end of the cathode sleeve is closed by a cap having electron emissive material exteriorly disposed thereon. The end portion of the sleeve underlying the sidewall of the cap is formed as a shield to provide a space between the sleeve and the cap except for limited seating and bonding contact therebetween at substantially the rim portion of the cap. Since the cathode assembly so formed provides limited heat conduction and radiation between the sleeve and the cap, the emissive cap area receives the major portion of its operational heat by direct radiation from the heater oriented within the cathode sleeve.

3,569,769
CATHODE WITH ELONGATED HEAT DISSIPATING AND SUPPORTING MEMBER

Yukio Takanashi, Hiratsuka-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Dec. 23, 1968, Ser. No. 786,112
Claims priority, application Japan, Dec. 27, 1967, 42/108,604
Int. Cl. H01j *1/14, 19/06*
U.S. Cl. 313—346 **14 Claims**

This dispenser cathode having a good heat efficiency consists of a round cylindrical envelope having an annular hollow chamber and accommodating a heating coil electrically insulated therefrom, an electron emitting layer mounted on the outer peripheral portion of the top wall of the envelope and a metallic cylindrical member fitted to the envelope in concentrical relationship therewith in such a manner that the outer circumferential wall of said cylindrical member is

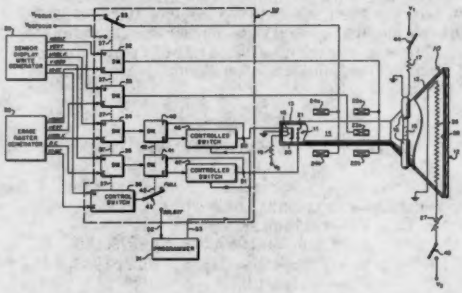


spaced at a prescribed interval from the inner circumferential wall of the envelope.

3,569,770
SELECTIVE FAST ERASE DARK TRACE SCAN CONVERTER

Walter R. Gustafson, Furlong, and William H. McMillen, Perkasie, Pa., assignors to the United States of America as represented by the Secretary of the Navy

Filed May 28, 1968, Ser. No. 732,600
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **9 Claims**



A dark trace tube and selective write/selective erase system therefor, the tube having a P-10 target for long storage of information written thereon. An electron gun provides a beam which is utilized to either write or erase an image on the P-10 target, depending upon the intensity of the beam. Erasure is effectuated by defocusing and increasing the beam energy to generate heat and may be caused to occur rapidly to erase either the entire raster or selected areas thereof. Additionally, a heater is provided about the inner periphery of the P-10 target for slow, controlled erasure capability. Means are also provided both to selectively write upon the P-10 target and to enhance the contrast of the written image.

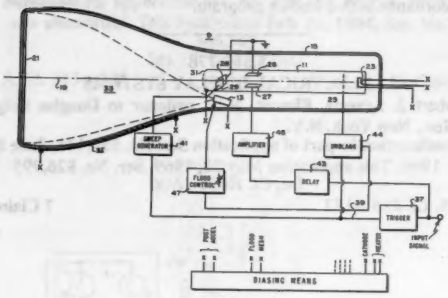
3,569,771
CATHODE RAY DISPLAY TUBE

James R. Pettit; David E. Chaffee, and James R. Ashley, Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 24, 1969, Ser. No. 801,529
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 **5 Claims**

A cathode ray tube for a high frequency oscilloscope includes a flood gun disposed within the tube to excite the phosphor material in the display screen for improved electron beam writing rates and for postfogging photographic film used to record signal traces written on the display

screen. Flood gun control circuitry activates the flood gun intermittently in timed relationship to the operation of the



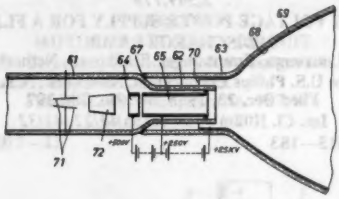
electron beam which produces the signal trace on the display screen.

3,569,772

CATHODE RAY TUBE HAVING AN ELECTROSTATIC ACCELERATING LENS

Klaus Schaffernicht, Traminerweg, and Adolf Eckert, Ulm(Danube), Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed Jan. 24, 1967, Ser. No. 611,274
Claims priority, application Germany, Jan. 28, 1966, Mar. 3, 1966, T30344;T30571
Int. Cl. H01j *29/46, 29/56*
U.S. Cl. 315—16 **16 Claims**



A tube envelope having a neck portion, a faceplate carrying a target electrode, and a large-diameter portion disposed between the neck portion and the target electrode and joined to the neck portion at an intermediate point along the length thereof so that a part of the neck portion extends into the space enclosed by the large-diameter portion, the tube being provided with an accelerating lens system composed of a first electrode disposed in the neck portion and a second electrode disposed in the large-diameter portion, with the first and second electrodes overlapping one another in the direction of the tube axis and the second electrode being disposed closer than the first electrode to the target electrode.

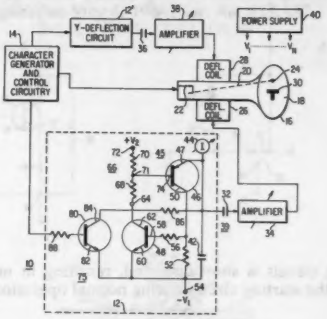
3,569,773

AUTOMATIC RETURN-TO-CENTER DEFLECTION CIRCUIT

Gus Filson Carroll, Saugus, Calif., assignor to RCA Corporation

Filed June 30, 1969, Ser. No. 837,541
Int. Cl. H01j *29/70*
U.S. Cl. 315—19 **7 Claims**

An automatic return-to-center deflection circuit develops a deflection signal that linearly increases from a minimum value to a maximum value and deflects a scanning beam in a display device from a first extreme position to a second extreme position. When the deflection signal reaches its predetermined maximum value, the scanning beam is auto-



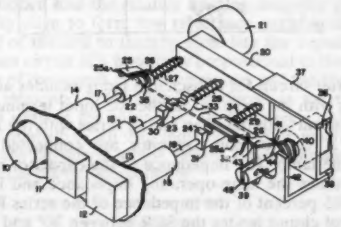
matically retraced to the center or midpoint position between the first and second extreme positions. The scanning beam is then retraced in a second step to the first extreme position when a new scanning cycle is initiated.

3,569,774

VEHICLE LIGHT CONTROL SYSTEM WITH MEMORY SWITCHING CIRCUIT

William Weigl, 11033 Greenhaven Parkway, Brecksville, Ohio 44141

Filed June 18, 1969, Ser. No. 834,349
Int. Cl. B60q *1/02*
U.S. Cl. 315—77 **10 Claims**



A pushbutton-operated light switch of a motor vehicle is automatically turned off in response to opening of an ignition switch and can, if desired, be operated to again energize the lights. A second pushbutton is capable of being manually operated to extinguish the lights, whether the ignition is on or off. A memory circuit is provided to enable automatic shutoff from the ignition switch only when both the ignition switch and the lights are on, and is independent of the order in which they were turned on.

3,569,775

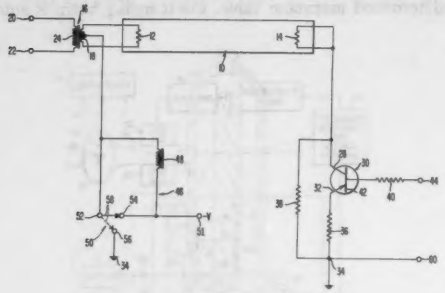
APPARATUS FOR STARTING AND OPERATING ELECTRIC DISCHARGE DEVICES

Charles P. Halsted, Orland, and Daniel J. Soltz, Norristown, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 29, 1968, Ser. No. 756,163
Int. Cl. H05b *39/00*
U.S. Cl. 315—105 **2 Claims**

A transistor drives a fluorescent discharge lamp with unidirectional current. By suitably pulsing and controlling the current, various lighting effects are obtained. An impedance element conducts current so as to keep the fluorescent lamp

in a fired condition whenever the transistor is not driving current. After firing the fluorescent lamp, a ballast coil in a



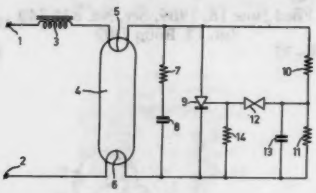
starting circuit is short-circuited, resulting in minimum DC loss in the starting circuit during normal operation.

3,569,776

A STARTER CIRCUIT FOR A DISCHARGE LAMP HAVING PREHEATED ELECTRODES

Jozef Cornelis Moerkens, and Hilbert Palmers, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 18, 1968, Ser. No. 760,451
Claims priority, application Netherlands, Sept. 30, 1967, 6713336
Int. Cl. H05b *41/23, 41/392*
U.S. Cl. 315—102 **5 Claims**



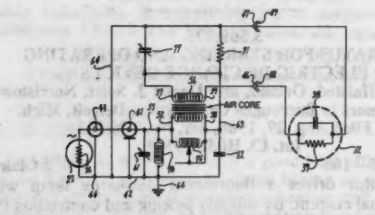
A starter circuit for a discharge lamp includes an inductor in series with the lamp across the AC input terminals and an SCR in shunt with the lamp and in series with the lamp electrodes. A resistor and capacitor are connected in series across the lamp. The impedance of the capacitor is 40 times to 150 times the lamp-operating impedance and is approximately 95 percent of the impedance of the series RC circuit. A control circuit ignites the SCR between 30° and 135° after the zero crossing of the AC supply voltage.

3,569,777

IMPEDANCE MATCHING NETWORK FOR PLASMA GENERATING APPARATUS

Harvey James Beaudry, Fremont, Calif., assignor to International Plasma Corporation

Filed July 28, 1969, Ser. No. 845,352
Int. Cl. H01j *7/24, 11/00*
U.S. Cl. 315—111 **6 Claims**



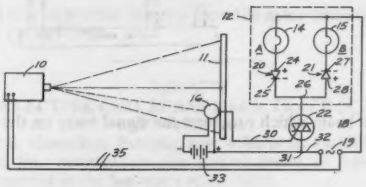
A passive impedance-matching network specifically designed to provide an interface between a fixed radio frequency power output of a generator and the capacitive electrodes of the gaseous plasma chamber of a plasma generating apparatus, the network having the particular characteristic of providing a close impedance match over a relatively wide changing impedance range of the plasma in accordance with a known program.

3,569,778

ELECTRICAL DISPLAY SYSTEMS

Robert J. Leverte, Elmont, N.Y., assignor to Douglas Leigh Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 556,145, June 8, 1966. This application May 22, 1969, Ser. No. 826,995
Int. Cl. H05b *37/00*
U.S. Cl. 315—153 **7 Claims**



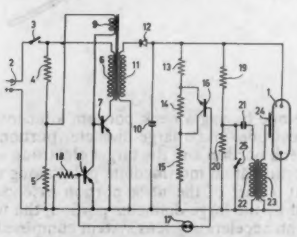
The apparatus comprises an outdoor advertising sign composed of a multiplicity of electric lamps arranged in a given design and operated to provide a plurality of light effects by a multiplicity of alternating current bidirectional triode thyristors known as Triacs, whose operations are controlled by a motion picture film, a motion picture projector and a multiplicity of photocells connected to the Triacs and arranged to receive light rays from the projector.

3,569,779

HIGH VOLTAGE POWER SUPPLY FOR A FLASH DISCHARGE LAMP

Meerten Luursema, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,297
Int. Cl. H02m *3/28;* **H05b** *41/22, 41/32*
U.S. Cl. 315—183 **10 Claims**



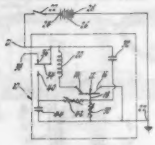
A power supply for a flash discharge lamp includes a capacitor and a voltage divider in parallel. A gas discharge tube is in parallel with a first part of the voltage divider and a controlled switching element is in parallel with a second part thereof. The gas tube is connected to the switching element so that at a given voltage across the capacitor, the gas tube ignites and causes the switching element to change state. This in turn abruptly alters the voltage distribution across the voltage divider in a sense to reduce the voltage across the gas tube to a level close to its operating voltage. The charge current to the capacitor is then interrupted. A relatively small discharge of the capacitor causes the gas tube to turn off, thereby allowing the capacitor charge current to flow again. The capacitor voltage variation is thus held within a narrow range.

3,569,780

TRANSISTORIZED FLASHER CIRCUIT

Kenneth R. Skinner, Anderson, and Myrneth L. Woodward, Lapel, Ind., assignors to General Motors Corporation, Detroit, Mich.

Substitute for application Ser. No. 130,157, Aug. 8, 1961, now abandoned. This application Feb. 24, 1964, Ser. No. 346,905
Int. Cl. H05b *37/02*
U.S. Cl. 315—209 16 Claims



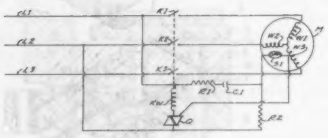
A transistorized flasher circuit having a set of normally closed relay contacts in series with a lamp load across a voltage source. The relay contacts are periodically opened and closed to flash the load by an oscillator which includes a relay coil which controls the relay contacts and includes the emitter and collector electrodes of a transistor connected in series. The base electrode of the transistor is connected between a capacitor and a resistor which are in series across the source. A discharge path is provided for the capacitor when the relay coil is energized. The transistor is turned on to energize the coil when the capacitor is charged and is turned off to deenergize the coil when the capacitor is discharged, whereby the source is periodically connected directly to the lamp load for flashing the lamps as the capacitor is periodically charged and discharged.

3,569,781

MOTOR PROTECTION CIRCUIT

Richard W. Strachan, Providence, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,644
Int. Cl. H02h *5/04*
U.S. Cl. 317—13 16 Claims



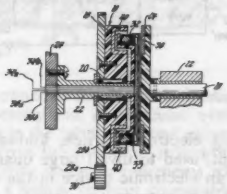
Apparatus controls the energization of an electrical load and is responsive to overheating of the load for protective deenergization thereof. The apparatus includes a gate triggerable semiconductor current switching device interconnected with means for energizing the electrical power load in response to conduction between the main terminals of the device. A thermistor thermally coupled to the load is interconnected with the gate terminal of the device for controlling the flow of triggering current thereto. Means is provided which is interconnected with the thermistor for initially supplying triggering current to initiate conduction between the main terminals of the device and then to supply a triggering current to latch the device in a conductive state. The thermistor reduces the triggering current to the device thereby to deenergize the load if heated above a predetermined threshold by overheating of the load.

3,569,782

FREQUENCY OF COMBINING APPARATUS

Jalal T. Salihi, Birmingham, and George J. Spix, Clawson, Mich., assignors to General Motors Corporation, Detroit, Mich.

Original application June 30, 1967, Ser. No. 650491, now Patent No. 3,471,764, dated Oct. 7, 1969. Divided and this application May 6, 1969, Ser. No. 822,187
Int. Cl. H02k *17/42, 17/30*
U.S. Cl. 317—6 4 Claims



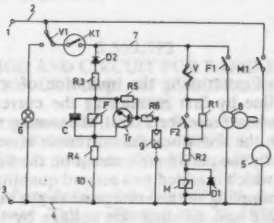
In a preferred form, a frequency-combining device is provided with two rotational members including complementary magnetic elements which are respectively rotated adjacent to an inductance coil by a main motor and an auxiliary motor to vary the coil inductance. The coil is connected in a tuned resonant circuit and the relative rotating magnetic elements periodically align to form low reluctance paths in the magnetic field of the coil to thereby modulate the impedance of the resonant circuit at a frequency proportional to the sum or difference of the speeds of the two motors and the number of magnetic elements. Pulse signals produced in the resonant circuit are suitable for controlling the frequency and timing of signals applied to an AC induction motor whereby the speed of the auxiliary motor controls predetermined slip frequencies in the induction motor.

3,569,783

A.C. FED SWITCHING MEANS FOR THE FLAME MONITORS OF HEATING SYSTEMS

Holger Nicolaisen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

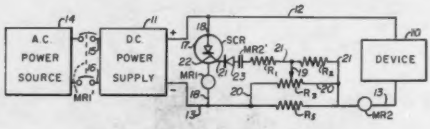
Filed July 16, 1969, Ser. No. 842,184
Int. Cl. H02h *7/085;* F23n *5/24*
U.S. Cl. 317—13 1 Claim



The invention relates to A.C. fed switching means for the flame monitor of a heating system. A D.C. motor relay is con-

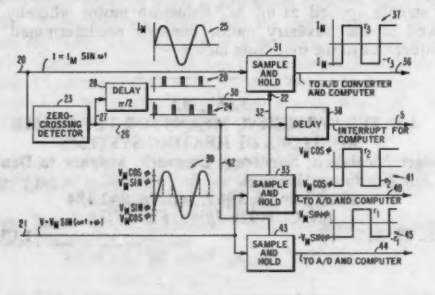
nected in series with the heating coil of a safety switch and with a photoelectrically operated switch. The photoelectrically operated switch is bridged by a resistor and the motor relay is bridged by a rectifier.

3,569,784
SOLID STATE CROWBAR CIRCUIT
Douglas G. Carroll, and Jack E. Menick, San Jose, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 21, 1968, Ser. No. 777,759
Int. Cl. H02h *3/08*
U.S. Cl. 317—16 **5 Claims**



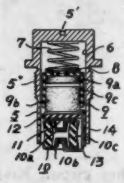
A fast-acting electronic switch, known as an electronic crowbar circuit, used to divert large quantities of electrical current from an electronic device in the event of a current fault or arc until a contractor can remove the power thereto, to prevent damage to the device as a result of excessive current. This is accomplished by the utilization of a silicon controlled rectifier and associated circuitry which will sense an arc or excessive current and switch practically all of the fault energy from the device to the crowbar in a time on the order of 1 microsecond, there being no auxiliary power source required for operation of the circuit.

3,569,785
POWER SYSTEM PROTECTIVE RELAYING BY TIME-COORDINATED SAMPLING AND CALCULATION
Robert C. Durbeck, Los Gatos, and Patrick E. Mantley, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 9, 1968, Ser. No. 743,420
Int. Cl. H02h *3/40*
U.S. Cl. 317—27 **7 Claims**



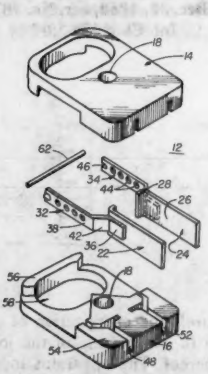
A method of controlling the operation of a breaker in a transmission line by first monitoring the current and if the current exceeds a prescribed limit, measuring a sampling of the voltage on the line when the current is at zero and dividing this value by the maximum current on the line to obtain a first quantity which is added to a second quantity obtained by measuring a sampling of the voltage when the current is at its maximum value and dividing this voltage by the maximum current. The previous calculations will provide a measure of impedance since the voltage when the current is zero is equal to V_m sin Φ while the voltage when the current is at maximum is equal to V_m cosine Φ and impedance in a rectangular coordinate representation is: $z=R+jX=V_m$ cosine $\Phi/I_m+j(V_m \sin \Phi/I_m)$. This apparent impedance is then compared against relay characteristics which are implemented in a programmed general purpose computer and in the event the apparent impedance lies within the relay characteristic zone, the associated breaker is tripped.

3,569,786
HIGH VOLTAGE ARRESTER
Takashi Kunugi, Tokyo, Japan, assignor to Kabushike Kaisha Sankosha, Tokyo, Japan, represented by Yolo Takeuchi
Filed Jan. 13, 1969, Ser. No. 790,776
Int. Cl. H01t *3/00*
U.S. Cl. 317—31 **1 Claim**



A safety device for safeguarding communications equipment and other electrical machines and instruments when an abnormal voltage is impressed on a system of lines lightening or other phenomena. The safety device comprises two arresters of different capacities for withstanding discharge contained in an arrester casing as a unit and connected in parallel between a line and ground whereby the safety device can cope with a wide range of abnormal voltages.

3,569,787
ELECTRICAL IGNITOR FOR FUEL IGNITION
Reed A. Palmer, Glendale, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 3, 1969, Ser. No. 795,815
Int. Cl. F23g *7/24*
U.S. Cl. 317—98 **1 Claim**

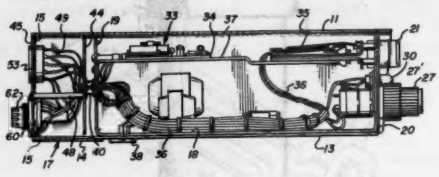


An electrical ignitor for fuel appliances formed of a mounting block of insulating material having an opening therein. An ignitor element having fragile properties is exposed to the opening in the mounting block. A pair of buss terminals are rigidly secured at one end to the mounting block and the ignitor element is mounted between the other ends of the buss terminals. The ends of the buss terminals to which said ignitor element is mounted can expand and contract with temperature changes so as to prevent the ignitor element from breaking. The ignitor element may be formed of molybdenum disilicide which is soldered or otherwise attached to the buss terminals.

3,569,788
MULTIPLE FUNCTION CONTROL DEVICE FOR CONTROLLING EMERGENCY EQUIPMENT IN MOTOR DRIVEN VEHICLES

Dennis L. Niblack, 4860 E. 18th Ave., Denver, Colo.

Filed Mar. 28, 1969, Ser. No. 811,419
Int. Cl. H02b 1/04
U.S. Cl. 317—101 7 Claims

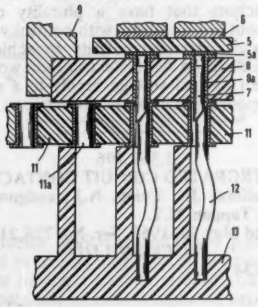


A multiple-function control device for installation in emergency vehicles for controlling special lights, sirens, radio communications equipment, radio teletype equipment, horns bells and other alerting devices, comprising a compact control unit accessible to the operator of the vehicle and a separate adapter unit, both removably mounted in a portable housing. The adapter serves as a universal separable connector between the control unit and the various emergency equipment controlled thereby and permits alternations, substitutions and replacements of the emergency equipment by quick plug-in connection to the adapter. The control means may be altered to meet the requirements of the emergency equipment without disturbing the adapter unit.

3,569,789
PLUG-IN TYPE CONNECTOR HAVING SHORT SIGNAL PATH

Franz Jenik, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 26, 1969, Ser. No. 827,695
Claims priority, application Germany, May 30, 1968, P 17 65 506.0
Int. Cl. H05k 1/12
U.S. Cl. 317—101 5 Claims

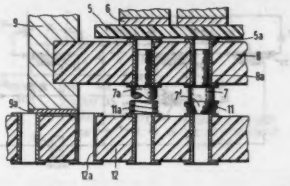


A connector for releasably connecting lines of a first conductor plate carrying modules with lines of a multilayered wiring plate at prescribed raster points in which contact pins having beveled ends extend from the first conductor plate and are receivable into cooperable openings in the other conductor plate and wherein springs having mating beveled ends are positioned in the openings for being wedged with the pins and for exerting a force thereon in a direction perpendicular to the first conductor plate.

3,569,790
PLUG-IN TYPE CONNECTOR HAVING SHORT SIGNAL PATH

Franz Jenik, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 27, 1969, Ser. No. 828,322
Claims priority, application Germany, May 30, 1968, P 17 65 507
Int. Cl. H05k 1/12
U.S. Cl. 317—101 6 Claims

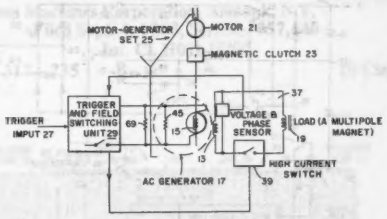


A plug-in type connector for use in electronic systems with high component density and, in particular, systems involving impulse processing in the subnanosecond range, in which the conductive path across the connector structure is reduced to a minimum, employing contacting elements which comprise a contact pin and a hollow resilient cooperable contact element, such as a coiled spring, constructed to resiliently receive the free end of the pin, with the latter being formed to expand said cooperable element and conductively engage the same.

3,569,791
REMANENT-FREE PULSING MAGNETS

Uriel Vogel, Patchogue, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 22, 1969, Ser. No. 868,441
Int. Cl. H01f 7/18
U.S. Cl. 317—123 8 Claims



Alternating current generator system for pulsing and demagnetizing a multipole magnet for focusing charged particles in a high energy accelerator beam by switching off the field coil of an AC generator and switching the generator output into the magnet whereby the inertia of rotation of the generator supplies energy to the magnet with low leakage inductance in the generator.

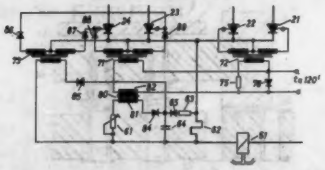
3,569,792
METHOD AND CIRCUIT FOR RAPID FIELD EXCITATION CONTROL OF ELECTROMAGNETIC DEVICES

Heinz Schaffersmann, 4805 Brake; Ernst Tuchen, 4930 Jerxen-Orbke, and Friedel Twellsiek, 4801 Milse, Germany, assignors to Binder Magnete KG, Villingen/Schwarzw., Germany

Continuation of application Ser. No. 647,171, June 19, 1967, now abandoned. This application Mar. 6, 1970, Ser. No.
P 15 14 725.8
Int. Cl. H01h 47/32
U.S. Cl. 317—123 13 Claims

The method for rapid field excitation control of an electromagnetic device, which includes converting an alternating

multiphase voltage into several mutually superimposed unidirectional voltages of respectively different maximal amplitudes to obtain a resultant unidirectional fluctuating excitation voltage, temporarily impressing the fluctuating excitation voltage upon the electromagnetic device during at least one of the magnetic field buildup and decay periods of the device, applying the resultant fluctuating excitation voltage during the buildup period and maintaining the resultant voltage until the current through the device attains a value



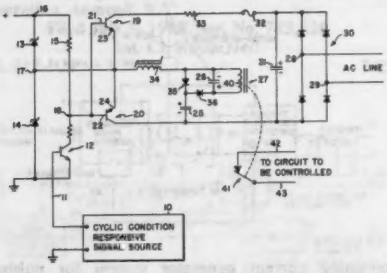
above that of the continuous energization, terminating the energization by disconnecting the normal operating voltage from the device, impressing upon the device a deenergizing equally poled voltage in response to a first change occurring in the load circuit of the device as a result of the disconnection, said deenergizing voltage being opposed to that of the device and being higher than the operating voltage, and removing the deenergizing voltage in response to a second change occurring in the circuit.

3,569,793

FAIL SAFE CIRCUIT WHICH DETECTS THE PRESENCE OR ABSENCE OF A CYCLIC SIGNAL OF REVERSIBLE POLARITY

Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 18, 1969, Ser. No. 834,426
Int. Cl. H01h *47/00*
U.S. Cl. 317—123 **10 Claims**



Two opposite conductivity type transistors are controlled by a cyclic signal of reversible polarity. The first transistor controls a first series circuit to charge a first capacitor by means of a current which flows in a first direction through a saturable reactor. The second transistor controls a second series circuit to discharge the first capacitor into a second capacitor by means of a current which flows in the opposite direction through the saturable reactor. The reactor limits the upper frequency of cyclic signal which will produce a sufficient or usable charge on the second capacitor.

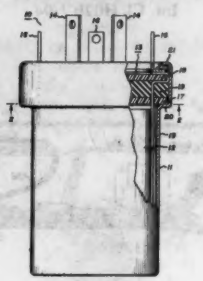
3,569,794

CAPACITOR COVER SEALING MEANS

John W. Carino, Columbia, S.C., assignor to General Electric Company

Filed May 22, 1968, Ser. No. 731,229
Int. Cl. H01g *9/10*
U.S. Cl. 317—230 **8 Claims**

An improved electrolytic capacitor cover is disclosed which includes inner and outer relatively rigid supporting disc members and an intermediate disc member of a rubbery or easily sealable material. The supporting disc members contain a number of slots therein for the passage of capacitor leads therethrough, and these slots are in registry with slits in



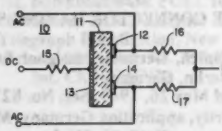
the rubbery sealing material. The inner disc member includes a chordwise slot therein in registry with a chordwise slit in the rubbery seal material. In the assembly of the capacitor a soft cathode foil tab or riser is easily passed through the chordwise slit by a slicing action therein.

3,569,795

VOLTAGE-VARIABLE, FERROELECTRIC CAPACITOR

Emanuel Gikow, West Long Branch, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed May 29, 1969, Ser. No. 829,079
Int. Cl. H01g *1/16, 9/14*
U.S. Cl. 317—231 **5 Claims**



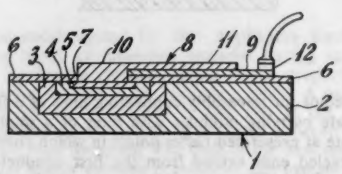
This disclosure discusses voltage-variable capacitors, including ferroelectric, ceramic-dielectric capacitors that are variable by control of the potential gradients within their dielectric material. This disclosure describes voltage-variable, dielectric capacitors that have a plurality of electrodes spaced throughout the dielectric with control-voltage potentials of alternately opposing polarity to achieve a higher potential gradient within the dielectric than would be possible from a given control voltage supply to a single pair of electrodes on opposing sides of the dielectric.

3,569,796

INTEGRATED CIRCUIT CONTACT

Charles D. Mulford, Jr., Union, N.J., assignor to Solitron Devices, Inc., Tappon, N.Y.

Filed May 10, 1968, Ser. No. 728,213
Int. Cl. H011 *1/14*
U.S. Cl. 317—234 **5 Claims**

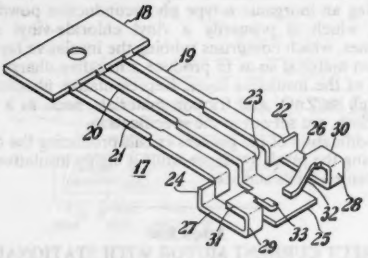


An integrated circuit contact assembly which utilizes an interface metal over the oxide between the element contact and the connecting wire.

3,569,797
SEMICONDUCTOR DEVICE WITH PREASSEMBLED MOUNTING

George Simmons, Morganville, N.J., assignor to The Bendix Corporation

Filed Mar. 12, 1969, Ser. No. 806,643
Int. Cl. H01l 1/02, 5/02
U.S. Cl. 317—234 9 Claims

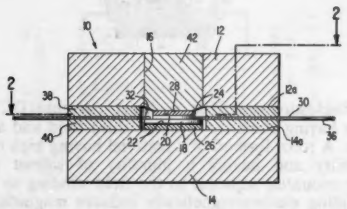


A semiconductor device in which the active element is isolated from the housing by a thermally conducting material and having the leads formed to provide spring contact with the active element and also serve as an inserting and positioning fixture.

3,569,798
DOUBLE HEAT SINK SEMICONDUCTOR DEVICE

Robert Amantea, Princeton; Hans Werner Becke, Morristown, and Paul Joseph Del Priore, Raritan, N.J., assignors to RCA Corporation

Filed May 13, 1969, Ser. No. 824,225
Int. Cl. H01l 1/12
U.S. Cl. 317—234 7 Claims

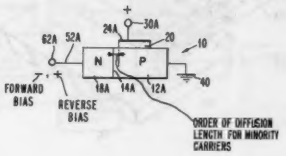


A semiconductor device comprising a pair of flat metal disks arranged in overlapping, spaced relation. A semiconductor element having a contact at each end thereof and a third contact between its ends is mounted between the disks with one of the end contacts being electrically and thermally connected to one of the disks. A metal plug extends through an opening in the other disks and is electrically and thermally connected to the other end contact of the semiconductor element. A thin metal contact plate is mounted between the disks and projects beyond the edges of the disk. The contact plate engages the third contact of the semiconductor element. A pair of annular washers of an electrical insulating material are mounted between the metal disks with each washer being between the contact plate and a separate one of the metal disks. The washers are secured to the contact plate and the metal disks to secure the assembly together.

3,569,799
NEGATIVE RESISTANCE DEVICE WITH CONTROLLABLE SWITCHING

Frank F. Fang and Alan B. Fowler, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1967, Ser. No. 609,113
Int. Cl. H01l 11/00
U.S. Cl. 317—235 9 Claims



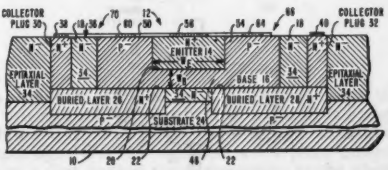
This disclosure provides a control feature for a solid state device which has a negative resistance characteristic in the current-voltage curve due to an insulator in the current path. A negative resistance device is fabricated by planar technology to have an insulator layer interposed between a semiconductor layer and a metal layer in the negative resistance current path. The control feature is provided through a control electrode which has a lateral junction in the semiconductor layer and near to the current path through the insulator layer.

Control voltage pulses of opposite polarities applied to the control electrode obtain switching between stable states of the device in both directions without a requirement of turning off the current.

3,569,800
RESISTIVELY ISOLATED INTEGRATED CURRENT SWITCH

Thomas W. Collins, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1968, Ser. No. 757,440
Int. Cl. H01l 19/00
U.S. Cl. 317—235 10 Claims



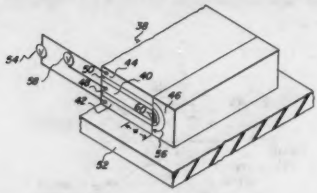
An integrated circuit is provided in which highly conductive collector current paths within the transistors of a logical current switch are formed by heavily doped buried layers extending into contact with a common base and heavily doped collector plugs extending between the buried layers and the various collector contacts. A lightly doped epitaxial layer surrounds the collector plugs and buried layers to resistively isolate the current switch from external circuit elements and to resistively isolate the collector current paths from one another. The current from the common emitter is crowded through the common base and into selected ones of the collector current paths in accordance with the relative voltages applied to distinct regions of the base electrically separated from one another by a relatively thin central region thereof.

3,569,801

THIN FILM TRIODES AND METHOD OF FORMING

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company

Filed June 2, 1969, Ser. No. 829,322
Int. Cl. H01l *13/00*
U.S. Cl. 317—235 14 Claims



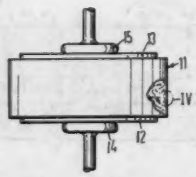
A thin film structure is described having two metal electrodes separated by a 50 to 500A. thick insulating layer of a material, e.g. aluminum oxide, having a sufficiently large band gap to negate current flow therethrough. At least a portion of one edge of the structure is separated from a control electrode by a semiconductive layer, e.g. vacuum deposited CdS, and tunneling current flow between the metal electrodes through the semiconductive layer is regulated by application of a suitable biasing voltage to the control electrode. In an alternate structure, the control electrode is positioned between and insulated from, the metal electrodes by thin films of a large band gap insulating material. A semiconductive layer overlies one edge of the laminar structure and tunneling current between the exterior electrodes through the semiconductive layer is controlled by a potential applied to the control electrode.

3,569,802

DIELECTRIC CAPACITORS WITH INNER BARRIER LAYERS AND LOW TEMPERATURE DEPENDENCE

Horst Brauer, Munich, and Renate Kuschke, Kreis Freising, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 16, 1968, Ser. No. 762,220
Claims priority, application Germany, Sept. 20, 1967, 1,614,605
Int. Cl. H01l *3/06, 3/22*
U.S. Cl. 317—238 15 Claims



Dielectric capacitor structures (and method of making the same) comprising a plurality of bound together crystallites having a barium-titanate peroyskite lattice structure of the general formula:

$$(Ba_{1-x}M^{II}_x)O \cdot z(Ti_{1-y}M^{IV}_y)O_2$$

which includes at least two different doping substances, one of which predominantly effects N-conductivity in the interior of the crystallites and the other which predominantly effects P-conductivity on the surface of the crystallites. M^{II} is selected from the group consisting of Ca, Sr, Pb, Mg and mixtures thereof; M^{IV} is selected from the group consisting of Zr, Sn and mixtures thereof; x and y are numerals ranging up to one; z is a number ranging from 1.005 to 1.05 the first doping substance is selected from the group consisting of Bi, Ce, La, Nb, Nd, Pr, Sb, Sm and Ta; and the second doping substance is selected from the group consisting of Cu, Fe and Mn.

3,569,803

ELECTROPHOTOGRAPHIC PROCESS UTILIZING FRICTION CHARGING

Masamichi Sato; Satoru Honjo, and Masaaki Takimoto, Saitama, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Ashigaria-Kamigun, Kanagawa, Japan

Filed Aug. 14, 1968, Ser. No. 752,472
Claims priority, application Japan, Aug. 15, 1967, 42/52318
Int. Cl. G03g *15/02, 13/02*
U.S. Cl. 317—262 5 Claims

A method for electrostatically charging the surface of a photoconductive insulative layer which is formed by dispersing an inorganic *n*-type photoconductive powder in a binder, which is primarily a vinyl chloride-vinyl acetate copolymer, which comprises rubbing the insulative layer with a friction material so as to produce a negative charge on the surface of the insulative layer. Representative photoconductors, such as ZnO, and friction materials, such as a cotton velvet cloth, are set out in the specification.

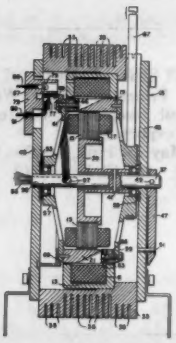
A modification of the process entails producing the friction by rubbing the insulative layer while a highly insulative liquid is maintained on its surface.

3,569,804

DIRECT CURRENT MOTOR WITH STATIONARY ARMATURE AND FIELD

Philip A. Studer, Silver Spring, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 20, 1968, Ser. No. 754,019
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 8 Claims



This disclosure describes a direct current (DC) motor structure having stationary (immovable) field and armature windings. A rotor formed of a material having high magnetic permeability and having a plurality of salient poles is rotatably mounted adjacent to the field winding so that the field winding electromagnetically induces magnetic flux in the poles. The armature windings are also mounted adjacent to the rotor. In operation, the magnetic flux induced in the poles interacts with the current passing through the armature windings. The current flow in the armature windings is controlled by a solid-state commutator in a manner normally associated with brushless DC motors. By controlling the magnitude of the current supplied to the field windings, the speed of the motor is controlled. In addition, the windings can be connected in a series, shunt or compound configuration as desired.

3,569,805

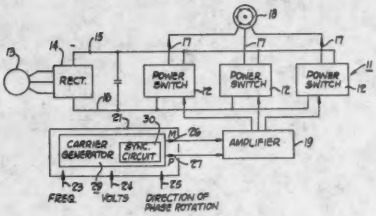
SYNCHRONIZING CIRCUIT

Peter W. Hammond, Cleveland, Ohio, assignor to Reliance Electric Company

Filed Aug. 28, 1968, Ser. No. 755,927
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 18 Claims

A synchronizing circuit for use especially with a pulse width modulated inverter wherein a carrier establishes the

pulsed conduction periods of the inverter in accordance with a reference voltage at a lower frequency which determines the fundamental frequency at which the inverter output voltage is supplied. This voltage may be supplied to an AC motor which runs at a speed corresponding to this fundamental frequency. The inverter may energize the motor at variable frequencies for variable speed hence the reference frequency is variable and the carrier frequency may not be an integral multiple thereof. Accordingly the present circuit shows a



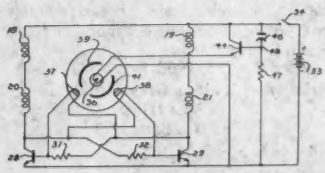
means to synchronize the reference with the carrier twice each cycle of the reference voltage. A shortened carrier period is provided so that this shortened carrier period plus a plurality of normal carrier periods equals a synchronizing interval; namely, one-half of the reference voltage cycle. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,569,806

STARTING ARRANGEMENT FOR SOLID-STATE COMMUTATED MOTOR

Harrison D. Brailsford, 670 Milton Road, Rye, N.Y. 10580

Filed Oct. 8, 1968, Ser. No. 765,873
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **6 Claims**



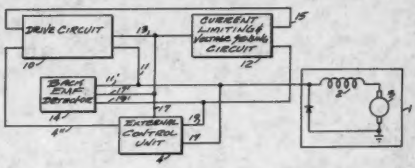
A circuit comprising a solid-state commutating means in an oscillatory circuit for a direct current motor. The circuit includes photosensitive means actuated by electric light means gated by the rotor and connected to modify the feedback as the amount of illumination striking the photosensitive means varies in response to the gating. The change in feedback controls the current in the circuit to provide proper starting and running currents. In particular the solid-state commutating means may be in the form of a circuit similar to a flip-flop with separate stator coils in series with the active elements of the flip-flop and with feedback resistors connecting the output of one part of the flip-flop to the input of the other. The photosensitive means include photoconductive cells connected to change the effective impedance of the feedback resistors and means may be included so that, after the motor has gotten started, the amount of current through the electric light may be reduced to a value too low to cause incandescence or the current may even be turned off entirely.

3,569,807

MOTOR SPEED CONTROL SYSTEM

Thomas J. Ulrich, Binghamton, N.Y., assignor to National Electro-Mechanical Systems, Inc., Binghamton, N.Y.

Filed Feb. 27, 1969, Ser. No. 802,792
Int. Cl. H02k *23/08;* **H02p** *5/06*
U.S. Cl. 318—308 **5 Claims**



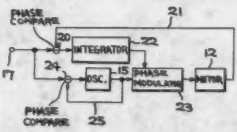
This disclosure described a motor speed control system for a direct current series field motor. The direct current series field motor is driven by a drive circuit that is current limited and actuated by a current-limiting voltage-sensing circuit; the direct current motor, the drive circuit, and the current-limiting and voltage-sensing circuit operates as a relaxation-type oscillator, aperiodically pulsing the direct current motor, switching the motor on and off at varying rates and ratios, to provide smooth, quiet and efficient motor operation.

3,569,808

SERVO SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Kunio Goto, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed July 22, 1968, Ser. No. 746,528
Claims priority, application Japan, July 25, 1967, 42/47,397
Int. Cl. H02p *5/00*
U.S. Cl. 318—314 **4 Claims**



This invention provides a servo system for controlling a motor driving a rotary magnetic head assembly in a magnetic recording and reproducing apparatus. The motor is driven by an output signal from an oscillator. A first phase comparator produces a first control signal responsive to the phase difference between a signal which is synchronous with the rotation of the motor and a reference signal which is derived from a signal that is to be recorded. A second phase comparator produces a second control signal responsive to the phase difference between the output of the oscillator and the reference signal. The first and second control signals are added to control the oscillating frequency and phase of the oscillator and thereby maintain a proper rotation of the motor.

3,569,809

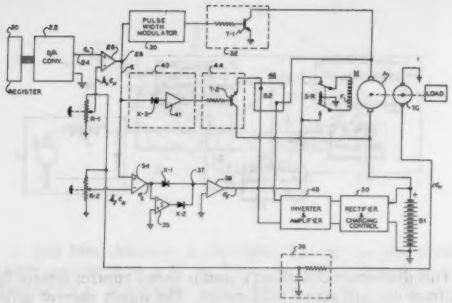
DC ELECTRIC MOTOR CONTROL SYSTEMS

Donald T. Comer, Los Angeles, Calif., assignor to Mobility Systems, Inc., San Jose, Calif.

Filed Jan. 22, 1968, Ser. No. 703,219
Int. Cl. H02p *5/06*
U.S. Cl. 318—338 **20 Claims**

A variable-speed direct current shunt motor control system having an increased torque at its upper speed range, in which

motor speed is controlled by controlling voltage applied to the motor armature and in which field voltage is derived by summing a first voltage commensurate with the applied armature voltage and a feedback voltage commensurate with



motor speed. A time-lag circuit delays application of the feedback voltage during acceleration from a low speed. A closed loop speed control system includes a regenerative braking circuit which charges an energy buffer during deceleration to reclaim energy expended during acceleration.

3,569,810

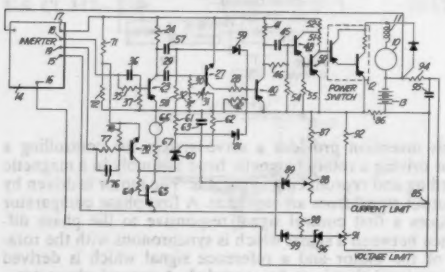
PULSE WIDTH MODULATOR WITH PULSE WIDTH LIMITING

Tom N. Thiele, Oconomowoc, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Continuation of application Ser. No. 232,462, Oct. 23, 1962, now abandoned. This application Nov. 20, 1968, Ser. No. 789,629

Int. Cl. H02p *5/06*

U.S. Cl. 318—341 **19 Claims**



A power control circuit for a battery-operated DC traction motor having an inverter providing a series of reference pulses defining periods therebetween, a pulse width modulator receiving said reference pulses and including a monostable multivibrator for generating a power pulse at sometime after the start of the period, power switch transistor means responsive to said power pulses to connect the motor with the battery source, and a pulse width limiting circuit including a controlled rectifier for prenaturely terminating the power pulse within the period in response to sensing of a predetermined overcurrent condition of the motor or power switching transistor means during said period.

3,569,811

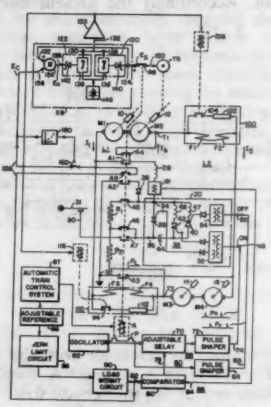
DYNAMIC BRAKING SYSTEM

Lalan G. Miller, and John M. Mills, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 24, 1969, Ser. No. 818,887

Int. Cl. H02p *3/06*

U.S. Cl. 318—381 **20 Claims**



There is disclosed an arrangement for controlling dynamic braking of a vehicle traction motor system wherein the effective average dynamic braking resistance is adjustable between predetermined minimum and maximum values, and wherein the motor field system is operated in full field mode or partial field mode, depending on whether commanded (requested) braking current at a given speed is greater or less than a predetermined value which for the given speed is at least that which would obtain in the full field mode and with the maximum effective average dynamic braking resistance in the circuit.

3,569,812

ELECTRIC WINDSCREEN WIPER SYSTEMS

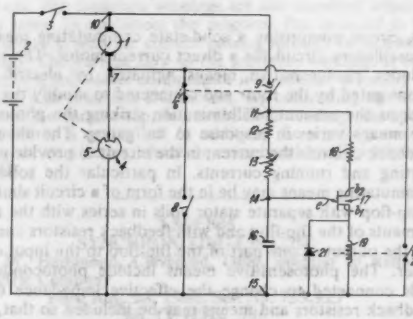
Trevor Bates, Dunstable, and Francis Stanley Griffin, Leighton Buzzard, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1968, Ser. No. 778,663

Claims priority, application Great Britain, Nov. 30, 1969, 54,491/67

Int. Cl. B60s *1/08*

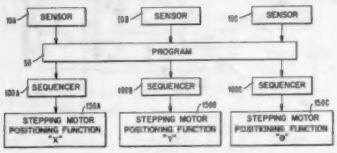
U.S. Cl. 318—443 **2 Claims**



In an electric windscreen wiper system, pulsed operation of the wipers is obtainable by means of a circuit, in which the

electric wiper motor is intermittently connectable to an electric power source by a relaxation oscillator circuit which includes a unijunction transistor.

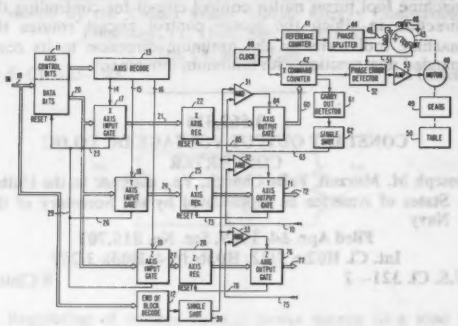
3,569,813
PROGRAM CONTROLLED POSITIONING DEVICE UTILIZING A STEPPING MOTOR
Kendall Clark; Joseph G. Drop, Poughkeepsie, N.Y., and Jean J. L. Godat, Neuchatel, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 9, 1969, Ser. No. 831,448
Int. Cl. G05b *9/18*
U.S. Cl. 318—569 **11 Claims**



This patent discloses apparatus for locating a workpiece or work table along X and Y coordinates and for simultaneously orienting the work to precisely position the same in those three coordinates. The apparatus includes three separate positioning means each of which includes sensor means in which a plurality of sets of contacts have a source of power applied initially to the first of the sets. Adjacent the sets of contacts is sequencer means which include a plurality of rotary switches having make before break contacts each aligned with a set of contacts in the sensor means. Intermediate each of the rotary switches are counter-type gear boxes having a predetermined gear ratio which connects the rotary switches together so that there is a predetermined and precise turning ratio between each of the rotary switches. Intermediate the sequencer and sensor is common program means, in the present instance a punch card, which is operable to connect power from the first of the sets of contacts of each sensor to the switch contacts of its associated rotary switch until the program means interrupts the power applied to the first of the sets of contacts of the sensor. Connected to the rotary switches is stepping drive means operative to rotate the rotary switches, while the drive means are also connected to the work or workpiece which is to be positioned in accordance with the program. In addition, a plurality of electromechanical transducers are provided which correspond to the number of rotary switches, each of the transducers having switches which are operable between a first and second position, the switches being operable in a first position to actuate the stepping motor and cause rotation thereof, and in a second position to apply the source of power to the next succeeding set of contacts of the sensor means. As described, the transducers are actuable between their first and second positions in a serial manner, each transducer's actuation being effected by its associated rotary switch.

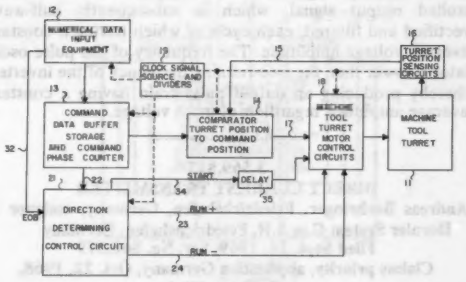
3,569,814
PROGRAMMED DIGITAL SERVO CONTROL INCLUDING REPEATED COMMAND UPDATING WHEREBY OUTPUT FUNCTION BECOMES SMOOTHLY VARYING
Jack Rosenberg, Pacific Palisades, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 17, 1969, Ser. No. 791,909
Int. Cl. G05b *19/24, 19/28*
U.S. Cl. 318—573 **14 Claims**

Digital numerical control for a machine tool. A plurality of digitally encoded signals or words, each representing an axis of the machine tool, are periodically supplied to a servo for each axis at a rate of less than 200 per axis per second. The digitally encoded signals update the servo by an amount equal to the value thereof to indicate a new desired position of the machine tool along that axis at that point in time. The servo continuously supplies an error signal representing the difference between the desired and actual position of the machine tool. A drive motor for each axis responds to the



corresponding error signal to drive the machine tool along that axis. The error signal is updated at a sufficiently high rate that the inertia of the driven tool operates to smooth the motion thereof.

3,569,815
SERVO DRIVEN TURRET DIRECTION DETERMINATION CONTROL FOR NUMERICAL CONTROL SYSTEM
Lawrence S. McNaughton, Crimora, Va., assignor to General Electric Company
Filed July 24, 1968, Ser. No. 747,249
Int. Cl. G05b *19/28*
U.S. Cl. 318—601 **13 Claims**



A numerical control system for a numerically controlled endless recirculated and reversible machine tool of the rotatable turret type having a plurality of discrete working positions. The numerical control system comprises command data input equipment for reading in command data relating to new working positions for the numerically controlled machine tool turret. A machine tool position comparator circuit is controlled by the command data input equipment and with feedback signals representative of the actual position of the machine tool turret being controlled. The machine tool position comparator circuit serves to compare the actual position of the machine tool being controlled to a commanded new position and for deriving an output control signal indicative of any difference for use in driving the machine tool turret to the commanded new position. A machine tool motor control circuit is controlled by using the output error control signal developed by the comparator circuit and drives the machine tool turret to its commanded new position. A direction determining control circuit has an input coupled to the output from the command data input equipment for determining the optimum direction for

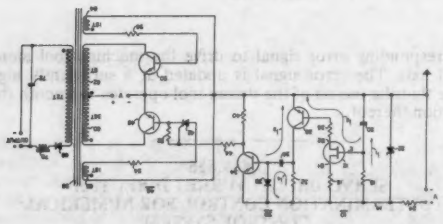
running the machine tool turret in order to obtain the commanded new position for the turret with minimum movement. The direction determining control circuit derives output directional control signals which are indicative of the optimum direction to be moved and which are supplied to the machine tool turret motor control circuit for controlling the direction in which the motor control circuit rotates the machine tool turret in the optimum direction to its commanded new position with minimum movement.

3,569,816

CONSTANT OUTPUT VOLTAGE DC TO DC CONVERTER

Joseph M. Marzolf, Falls Church, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 14, 1969, Ser. No. 815,707
Int. Cl. H02m *3/22;* **H03b** *3/14;* **H03k** *3/281*
U.S. Cl. 321—2 **8 Claims**



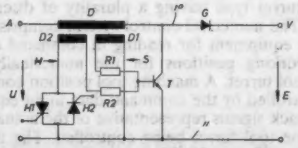
A DC to DC converter for producing a constant voltage DC output signal which includes an unbalanced square-loop magnetic core inverter, a single silicon controlled rectifier for initiating a single complete cycle of said inverter upon the receipt of an input pulse signal, and a constant frequency pulse oscillator coupled to a control input of the silicon controlled output signal, which is subsequently half-wave rectified and filtered, each cycle of which having a constant average voltage amplitude. The frequency of the pulse oscillator is lower than the free-running frequency of the inverter, thereby producing an output pulse train having a constant average amplitude regardless of input voltage.

3,569,817

DIRECT CURRENT TRANSMITTER

Andreas Boehringer, Friedrichshafen, Germany, assignor to Dornier System G.m.b.H, Friedrichshafen, Germany

Filed Sept. 24, 1969, Ser. No. 860,579
Claims priority, application Germany, Oct. 22, 1968, P 18 04 429.6
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **8 Claims**



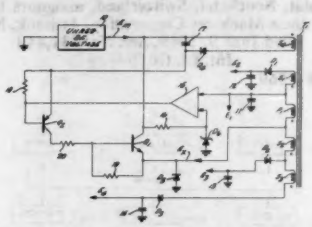
The transmitter circuit is provided with a transformer with a primary winding to which direct current is applied and a secondary coil which has two secondary windings. One secondary winding connects over a resistance to a transistor bridging each of the supply lines of the consumer while the other secondary winding is in a circuit including a pair of thyristors connected in antiparallel and a resistance which connects to the base of the transistor.

3,569,818

MULTIPLE OUTPUT DC VOLTAGE REGULATOR

Rodney J. Dahlinger, Canoga Park, and Robert P. Farnsworth, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed July 22, 1969, Ser. No. 843,351
Int. Cl. H02m *3/28;* **G05f** *1/64*
U.S. Cl. 321—2 **18 Claims**



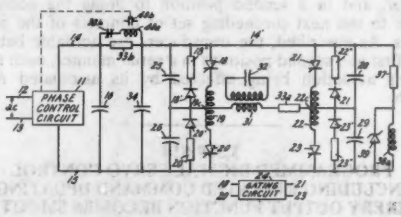
A transformer having a multiplicity of secondary windings is employed to provide a multiplicity of different regulated output voltages by turning on a transistor switch in series with the primary winding, the unregulated voltage and a selected one of the regulated output voltages whenever the selected output voltage, so driven, falls below a reference voltage. When the selected output voltage is driven above reference voltage, the transistor switch is turned off. Diodes rectify the secondary winding currents that result when the switch turns off, to charge filter capacitors. The primary or one of the secondaries, whichever is employed to provide regulation of the selected output voltage, is clamped during the off period to the previously driven voltage. This clamping action produces on all output terminals regulated voltages related to the clamping voltage by a transformer turns ratio. A separate boost winding may be provided on the transformer to cause the transistor switch to be operated in saturation during the on cycle.

3,569,819

RECOVERY SYSTEM FOR SHORT CIRCUITS THROUGH SWITCHING DEVICES IN POWER CIRCUITS

Francois D. Martzloff, William McMurray, and John P. Walden, Schenectady, N.Y., assignors to General Electric Company

Filed Jan. 16, 1969, Ser. No. 791,750
Int. Cl. H02m *1/18;* **H02h** *7/14*
U.S. Cl. 321—12 **8 Claims**

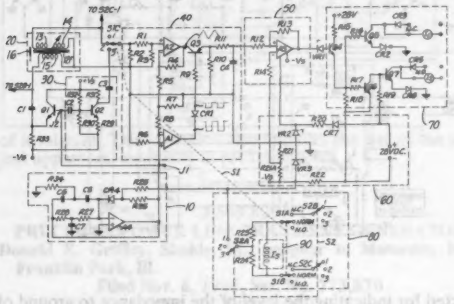


When a short circuit or shoot-through occurs in a power circuit having two thyristors in series with commutating circuit inductors, a shunt capacitor isolated from the DC power supply by an impedance automatically resonates with the inductors to turn off both thyristors. A second automatic recovery system for repeated short circuits that occur before the capacitor has recharged operates to temporarily disable the power supply. In a high-voltage inverter the impedance is a resistor functioning to dampen voltage overshoots and to implement a relay or solid state second recovery system.

3,569,820
PROXIMITY DETECTION SYSTEM

Robert K. Nishimuta, Pomona, Calif., assignor to Bourns, Inc.

Filed Feb. 24, 1969, Ser. No. 801,392
Int. Cl. H02p 13/10
U.S. Cl. 323—51 5 Claims

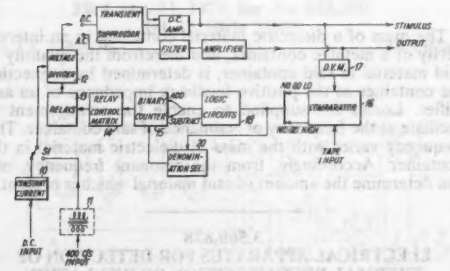


A system to replace directly actuated electric switches in hazardous or other adverse environments, for example aircraft landing-gear-actuated switches, in which system movement of a magnetic target relative to an alternating magnetic field causes a phase shift or inversion in an AC signal which change is detected by a phase detector the output of which controls solid-state electric switches or controllers which may be remote from the adverse environment.

3,569,821
PROGRAMMABLE DIGITAL TO ANALOGUE CONVERTER SYSTEM

Ronnie Pepper, Luton, England, assignor to British Aircraft Corporation Limited, London, England

Filed Jan. 30, 1969, Ser. No. 795,307
Int. Cl. G05f 1/10
U.S. Cl. 323—66 3 Claims

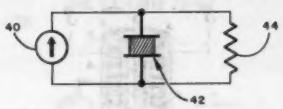


Automatic test equipment requires highly accurate test signals. The maintenance of a substantially constant input, accurately defined within precise limits, insures such a test signal. A digital comparator wherein the measured values of the responses to the test signals are compared with predetermined values available from a programmed tape is also employed to maintain the signal constant.

3,569,822
ANTIFERROELECTRIC VOLTAGE REGULATION

Frank W. Neilson, and Otmar M. Stuetzer, Albuquerque, N. Mex., assignors to the United States of America as represented by the United States Atomic Energy Commission.

Filed Apr. 11, 1969, Ser. No. 815,429
Int. Cl. H01g 7/06
U.S. Cl. 323—93 3 Claims

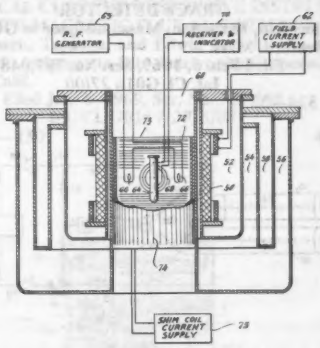


Regulating of voltage from a power source to a load is achievable by disposing an antiferroelectric ceramic element between electrodes, the antiferroelectric element having a field-induced antiferroelectric to ferroelectric transition at desired voltage regulation level.

3,569,823
NUCLEAR MAGNETIC RESONANCE APPARATUS

Marcel J. E. Golay, Rumson, N.J., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 18, 1968, Ser. No. 768,809
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 4 Claims

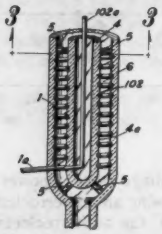


An improved field homogenizing coil arrangement of a type having a generally tubular coil form extending about a test sample in an NMR apparatus is described. The coil arrangement includes a plurality of separate coils which are orthogonally related and which are formed of conductive segments positioned on opposite surfaces of the coil form and are conductively coupled through the form. The coils include arcuate-shaped segments positioned on one surface of the form and aligned normally with respect to a main polarizing field component, and rectilinear shaped segments positioned on an opposite surface of the form and extending in a direction substantially parallel to the main polarizing field component. The conductive segments are fabricated on the form by printed circuit techniques and the form is adapted to be rolled into a scroll-shaped configuration. With this arrangement, a relatively large number of field corrective coils are positioned on the form while overlapping rectilinear segments cancel undesired fields established by current return paths.

3,569,824
CONDUCTIVITY PROBE HAVING A PAIR OF HELICALLY WOUND ELECTRODES

Alois Ruse, Stierstadt (Taunus), Germany, assignor to Hartmann & Braun Aktienggsellschaft, Frankfurt am Main, Germany

Filed Sept. 26, 1967, Ser. No. 670,684
Int. Cl. G01n 27/42
U.S. Cl. 324—30 1 Claim

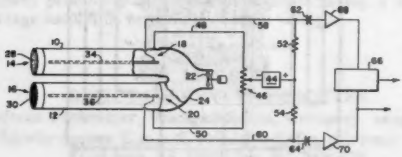


A conductivity cell having one or two interior cylindrical walls enclosing the fluid. The coaxial helical electrodes are secured along their spaced convolutions to either one wall, or, each of the electrodes to respective opposite walls, the convolutions being of wire and embedded in the wall material to a depth of about half a diameter of the wire. The number of coils is at least two to the cell. The materials of the wire and wall have essentially the same coefficients of thermal expansion.

3,569,825
CORONA DISCHARGE PLASMA OSCILLATION GAS TRACE DETECTOR

Pedro Lilienfeld, Lexington, Mass., assignor to GCA Corporation, Bedford, Mass.

Filed Feb. 6, 1969, Ser. No. 797,048
Int. Cl. G01n 27/00
U.S. Cl. 324—33 16 Claims



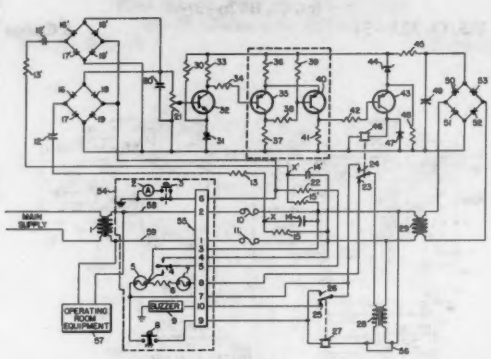
A method and apparatus for sensing and measuring the presence and amount of a specific gaseous component in a volume of gas as well as measuring gas density over a range of densities. The gas under test is subjected to an inhomogeneous electric field to create a plasma having characteristic oscillation frequencies. By comparison with previously charted data or by comparison with the output of a simultaneously excited reference gas, the presence and concentration of the specific component may be evidenced by the plasma oscillation frequencies.

3,569,826
GROUND FAULT DETECTOR APPARATUS INCLUDING A PAIR OF COMPLEMENTARILY CONNECTED BRIDGE DETECTOR MEANS FOR ISOLATED ELECTRICAL POWER SYSTEMS

James H. Burnett, Wilton, N.J., assignor to Edwards Company, Inc., Norwalk, Conn.

Filed Jan. 7, 1969, Ser. No. 789,579
Int. Cl. G01r 31/02
U.S. Cl. 324—51 6 Claims

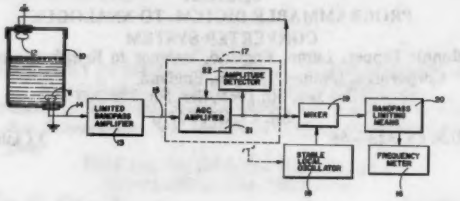
An improved ground fault detector in which parallel dual phase sensitive bridge detectors are complementarily connected for indicating the level of the impedance to ground of the electrical line.



3,569,827
APPARATUS FOR DETECTING THE AMOUNT OF MATERIAL IN A RESONANT CAVITY CONTAINER

Hugh L. Dryden, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Jack C. Miller

Filed Nov. 16, 1965, Ser. No. 508,169
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 7 Claims



The mass of a dielectric material contained in an internal cavity of a metallic container, and therefrom the quantity of said material in said container, is determined by connecting the container as the positive feedback impedance of an amplifier. Losses are supplied to enable the arrangement to oscillate at the frequency of resonance of said container. This frequency varies with the mass of dielectric material in the container. Accordingly, from the resonant frequency, one can determine the amount of said material which is present.

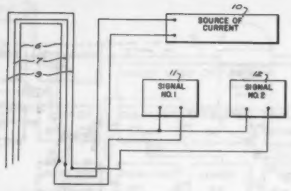
3,569,828
ELECTRICAL APPARATUS FOR DETECTION OF THERMAL DECOMPOSITION OF INSULATION

Borg Bernsen, Sacramento, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 5, 1968, Ser. No. 719,029
Int. Cl. G01n 27/02
U.S. Cl. 324—65 8 Claims

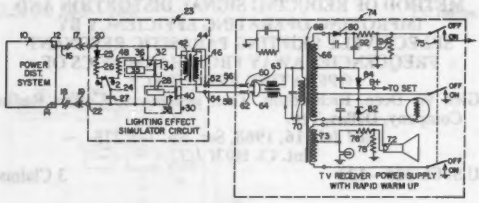
This invention comprises an article of manufacture made up of alternating layers of electrically conductive rubber and electrically nonconductive rubber with power supplied to each of the electrically conductive rubber layers and a means for measuring any change in the rate of flow of electric cur-

rent between any two electrically conductive rubber layers. This article is useful as a detector for thermal decomposition



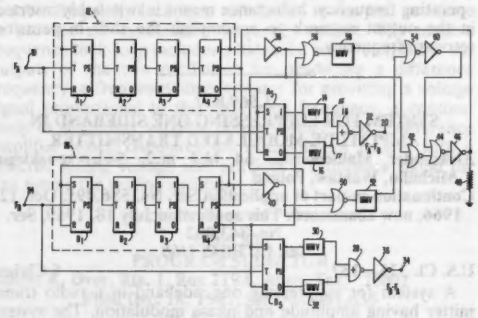
of insulation. This invention also includes the use of the subject apparatus, especially in rocket engines.

3,569,829
PRECISION POWER LINE TRANSIENT GENERATOR
Donald E. Griffey, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 6, 1968, Ser. No. 773,870
Int. Cl. G01r *31/02*
U.S. Cl. 324—72 **3 Claims**



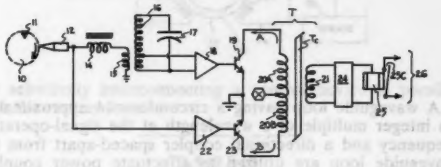
An electronic-testing apparatus that can be operated to simulate and apply to a circuit under test, transient voltages similar in amplitude and duration to those induced by lightning in an electrical power distribution system having a time delayed means for transient voltage suppression.

3,569,830
FREQUENCY DIFFERENCE DETECTOR
Edward W. Gass; Jack Hammond, and Paul Lorenzino, Jr., Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Apr. 21, 1970, Ser. No. 028,280
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 **12 Claims**



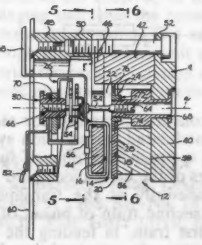
Method and apparatus for determining the difference in frequency or pulse repetition rate between two input signals irrespective of the relative frequency, phase or synchronism in which a predetermined number of pulses in one input signal is stored and subsequent pulses counted until a predetermined number of pulses in the second input signal are accumulated, at which time the process is repeated.

3,569,831
OVER-FREQUENCY ALARM
Richard K. Davis, Roanoke, Va., assignor to General Electric Company
Filed Aug. 28, 1968, Ser. No. 755,929
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 **1 Claim**



An electrical circuit adapted to compare an externally sensed frequency with a reference frequency for giving an indication when the former exceeds the latter via voltage and current phase relationship utilizing a phase shifting inductance, a resonant circuit and a transformer having a core of square loop material, a dual primary winding and an alarm connected to its secondary winding.

3,569,832
ELECTRICAL CURRENT RESPONSIVE INSTRUMENT WITH MAGNETIC FLUX ADJUSTMENT
Henry Marusek, Tujunga, and Edwin L. Schwartz, Los Angeles, Calif., assignors to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Jan. 6, 1969, Ser. No. 789,158
Int. Cl. G01r *1/20, 5/08*
U.S. Cl. 324—150 **4 Claims**

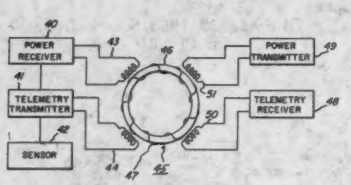


A current responsive mechanism for electrical instruments of the type having an armature mounted conductor means positioned within the air gap between a pair of spaced magnetic poles of opposite polarity, whereby current flow through the conductor means produces a driving force on the armature in one direction of its movement. The mechanism is provided with a magnetically permeable pole plate which seats against and is releasably secured to one magnet face in such a way that the plate may be adjusted in its edgewise direction to alter the magnetic flux distribution in the air gap for calibration purposes. The disclosed embodiment of the invention is a long scale vertical gap electrical indicating instrument, or meter, wherein the pole plate is adjustable to provide the meter with a linear current response throughout the range of armature rotation.

3,569,833
RESONANT RING COUPLING COMMUNICATIONS SYSTEM

Robert T. Milton, Burnt Hills, N.Y., assignor to General Electric Company

Filed Dec. 20, 1968, Ser. No. 785,636
Int. Cl. H04b 5/00, 3/60
U.S. Cl. 325—26 8 Claims

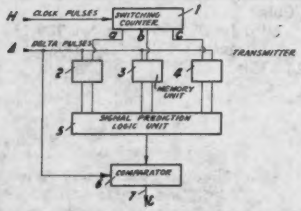


A waveguide loop having a circumference approximately an integer multiple of a wavelength at the signal-operating frequency and a directional coupler spaced-apart from the waveguide loop are utilized to effectuate power coupling without significant signal loss between a transmitter and a receiver in relative motion with respect to each other.

3,569,834
DELTA-MODULATED TRANSMISSION SYSTEM WITH PREDICTION OF VOICE DEVELOPMENT AND TRANSMISSION OF ONLY COORDINATION AND ERROR SIGNALS

Hubert P. Debart, Meudon, France, assignor to Societe Anonyme Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique, Paris, France

Filed June 14, 1967, Ser. No. 646,072
Claims priority, application France, June 17, 1966, 66,017
Int. Cl. H03k 13/22; H03j 3/04
U.S. Cl. 325—38 2 Claims



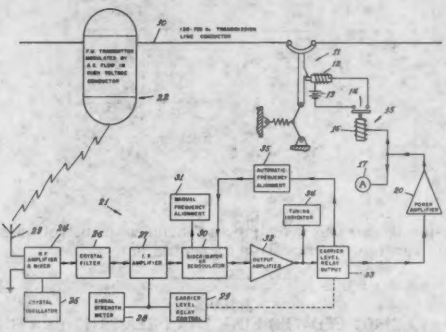
The invention concerns a method for reducing the bandwidth in a delta-modulated transmission system which consists in setting up a prediction table of future pulses, base upon the last pulses of the delta-modulated train of pulses, in setting up simultaneously at the transmission and at the reception ends, a second train of pulses of the same repetition rate as the first train, in feeding the receiver with an error signal each time the concordance between the predicted pulse and the corresponding delta pulse is not realized, in correcting consequently the train of pulses built at the receiving end for building up with accuracy the initial train of delta pulses and finally in deducing from it the signal, for example a vocal one.

3,569,835
CRYSTAL CONTROLLED RADIO RECEIVER FOR HIGH VOLTAGE ALTERNATING CURRENT SENSING USING FREQUENCY MODULATION WITH AUTOMATIC FREQUENCY AND OUTPUT CONTROL

Robert H. Harner, Park Ridge, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Jan. 24, 1968, Ser. No. 700,275
Int. Cl. H02h 7/26
U.S. Cl. 325—63 15 Claims

A radio receiver adjusts its center frequency according to the center frequency differential between the receiver and associated transmitter, maintains the correction for a time

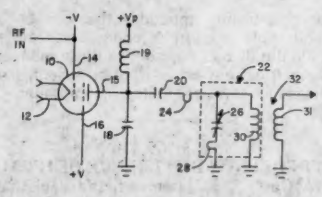


after transmission ceases, opens the circuit to the load driven by the receiver and grounds the load circuit.

3,569,836
METHOD OF REDUCING SIGNAL DISTORTION AND IMPROVING OPERATING EFFICIENCY BY SELECTIVELY SHIFTING PARASITIC RESONANT FREQUENCIES AWAY FROM HARMONICS OF OPERATING FREQUENCY

Glen W. Deen, Richardson, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed July 16, 1968, Ser. No. 745,275
Int. Cl. H03f 1/32
U.S. Cl. 325—123 3 Claims



Operating efficiency of a high power radio transmitter is improved by selectively shifting the parasitic resonant frequency in the output network as a function of transmitter operating frequency. Inductance means is switchably inserted in the output network to accomplish the shift in parasitic resonant frequency.

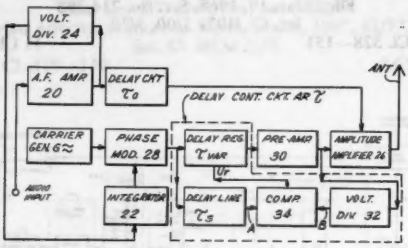
3,569,837
SYSTEM FOR SUPPRESSING ONE SIDEBAND IN AMPLITUDE-MODULATED TRANSMITTER

Aleksander Makiedonski, 64 bl.4 m.2, Swierczewskiego, Michalin, Warsaw, Poland

Continuation-in-part of application Ser. No. 586,095, Oct. 12, 1966, now abandoned. This application July 18, 1969, Ser. No. 843,002
Int. Cl. H04b 1/68
U.S. Cl. 325—137 6 Claims

A system for suppressing one sideband in a radio transmitter having amplitude and phase modulation. The system comprises an integrator circuit receiving the signal to be transmitted from an amplitude-modulator amplifier output through a compensated voltage divider, the output of said amplifier being also applied to a delay line the output of

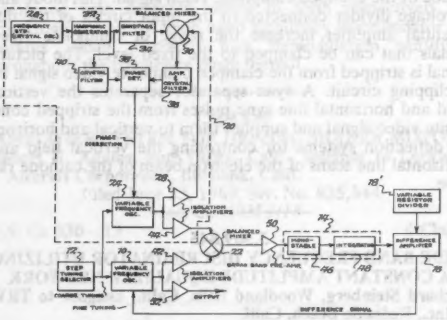
which is coupled to a modulation stage of the transmitter. Input terminals of a high-frequency preamplifier of said transmitter are coupled to output terminals of a phase modulator of said transmitter through an automatic delay control circuit.



3,569,838
WIDE RANGE FREQUENCY SYNTHESIZER

David J. Blair, Snyder, and George H. Kam, Tonawanda, N.Y., assignors to Sylvania Electric Products Inc.

Filed Apr. 3, 1968, Ser. No. 718,532
Int. Cl. H04b *1/04*
U.S. Cl. 325—184 7 Claims



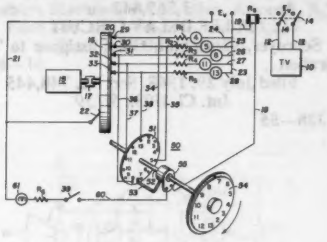
A frequency synthesizer particularly suitable for VHF applications comprising a pair of variable frequency oscillators adapted to be simultaneously tuned in coarse frequency steps, one of the oscillators being phase locked to a frequency standard, and the second oscillator being controlled by a tunable frequency lock loop referenced to the first oscillator to provide the synthesized frequency output. The tunable frequency lock loop includes a balanced mixer coupled at the outputs of the two oscillators for producing a difference frequency, a frequency discriminator for providing a voltage signal proportional to this difference frequency, a continuously or discretely variable tuning voltage, and a difference amplifier which compares the discriminator output with a selected tuning voltage and provides a difference signal for fine tuning the second oscillator.

3,569,839
PROGRAM SELECTOR

Robert K. Dyer, Rte. 1, Box 219A, Allen, Tex. 75002

Filed Dec. 18, 1967, Ser. No. 691,635
Int. Cl. H04b *1/06*
U.S. Cl. 325—396 7 Claims

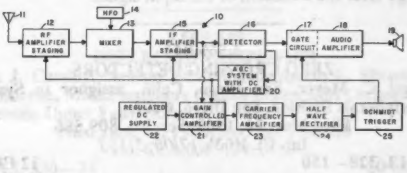
Disclosed are apparatus and methods for limiting reception and conversion of television broadcast signals. The apparatus includes clock-driven screening means which selectively interrupt current flowing through control lines, and switches for selectively interconnecting a control device in parallel with the control lines.



3,569,840
CARRIER SQUELCH SCHEME

Edward H. Tanaka, and James C. Riach, Toronto, Ontario, Canada, assignors to Collins Radio Company of Canada, Ltd.

Filed Oct. 4, 1968, Ser. No. 765,227
Int. Cl. H04b *1/16*
U.S. Cl. 325—402 8 Claims

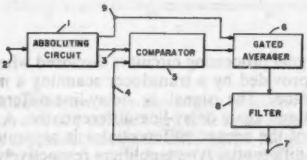


A carrier squelch system monitoring both an AGC voltage developed in a superheterodyne receiver and the signal level present in the receiver as represented by the IF carrier signal, with inverse variation of the gain of an AC amplifier in the squelch circuit under control of the AGC voltage, developed out of the IF section of the receiver, in the squelch circuit, and with the IF staging such that the receiver is normally in hard AGC with noise input alone. The additional stages of amplification through the squelch circuit are AC signal amplification stages with temperature change and supply voltage level change induced operational variations minimized.

3,569,841
HARMONIC-REJECTING AC-TO-DC CONVERTER

Peter L. Richman, 22 Barberry Road, Lexington, Mass.

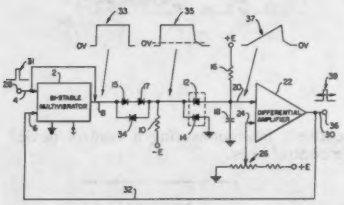
Filed July 9, 1968, Ser. No. 743,558
Int. Cl. H03K *5/08*; G01r *15/10*; H02b *1/24*
U.S. Cl. 328—26 8 Claims



An AC-DC conversion system which reduces sensitivity of the conversion to selected harmonics of the input AC wave. The absolute value signal is formed of the input AC wave and compared with a DC level which is the output of the system

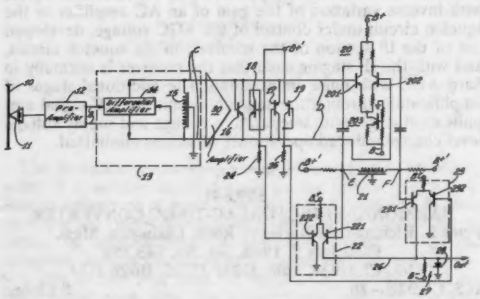
to provide gating signals. The latter are used to time-gate the absoluted AC signal through an averaging device.

3,569,842
PULSE DELAY CIRCUIT
John R. Schroyer, Cincinnati, Ohio, assignor to The Bendix Corporation
Filed July 29, 1968, Ser. No. 748,445
Int. Cl. H03k *5/159*
U.S. Cl. 328—55 **7 Claims**



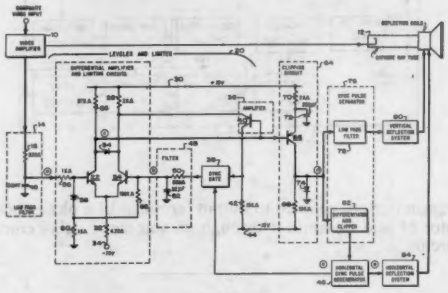
This disclosure describes an electronic solid state pulse delay circuit for producing an output pulse a predetermined time after the application of an input triggering pulse by having the input trigger pulse directly initiate the generation of a ramp voltage and simultaneously trigger a bistable device the function of which is to continue the generation of the ramp voltage after the cessation of the input signal.

3,569,843
ZERO CROSSING DETECTORS
Forrest C. Meyer, San Diego, Calif., assignor to Systems Peripherals Division, San Diego, Calif.
Filed Mar. 24, 1969, Ser. No. 809,586
Int. Cl. H03k *17/00, 5/153*
U.S. Cl. 328—150 **12 Claims**



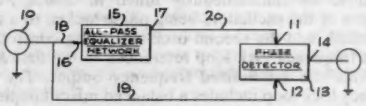
A readout signal processing circuit is disclosed wherein the read signal is provided by a transducer scanning a magnetic recording surface. The signal is delay-line-differentiated, doubly clipped and again delay-line-differentiated. A double-ended output of the second differentiator is separately connected to two differential-type amplifiers respectively receiving a reference derived from diodes duplicating the clipping levels. The outputs of the two amplifiers are coupled to provide a single output train, the pulses of which are alternatingly produced in the two amplifiers in representation of oppositely directed zero crossings in the differentiated transducer readout signals representing in turn magnetic flux reversals on the recording surface.

3,569,844
SYNC STRIPPER
Robert E. Lynn, Somerville, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 19, 1968, Ser. No. 714,208
Int. Cl. H03k *5/00, 5/20*
U.S. Cl. 328—151 **11 Claims**



A video amplifier supplies an input composite video signal to the intensity control electrode of a cathode ray tube and through a low-pass filter to a differential amplifier. The sync tips of the filtered composite video signal are clamped to a fixed level in the output circuit of the differential amplifier by a closed loop feedback circuit. A diode connected in the output circuit of the differential amplifier limits the magnitude of the clamped composite video signal. This diode and a voltage divider connected to the input circuit of the differential amplifier increase the range of composite video signals that can be clamped to the fixed level. The picture signal is stripped from the clamped composite video signal by a clipping circuit. A sync separator separates the vertical field and horizontal line sync pulses from the stripped composite video signal and supplies them to vertical and horizontal deflection systems for controlling the vertical field and horizontal line scans of the electron beam of the cathode ray tube.

3,569,845
WIDE BAND FREQUENCY DISCRIMINATOR UTILIZING A CONSTANT AMPLITUDE EQUALIZER NETWORK
Richard Steinberg, Woodland Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Feb. 2, 1967, Ser. No. 613,614
Int. Cl. H03d *3/00*
U.S. Cl. 329—110 **5 Claims**



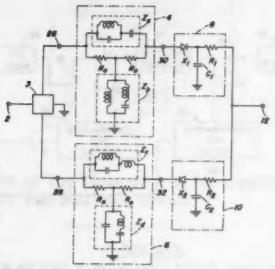
A wide band frequency discriminator is disclosed wherein the signal whose frequency is to be detected is applied simultaneously to two parallel paths. One path leads directly into one input of a wide band phase detector, such as a diode switch circuit, and the other path leads through an all pass equalizer network to the other input of the phase detector. The all pass equalizer network is designed to provide a transfer function which shifts the phase of the input signal as a preselected function of the signal frequency but whose amplitude characteristic is independent of signal frequencies. Since the output of the all pass network is compared in phase to the original signal by the phase detector, its output is a direct current voltage the amplitude of which is a measure of the phase difference introduced by the equalizer network which is in turn a known function of signal frequency.

3,569,846

FREQUENCY DISCRIMINATOR APPARATUS

Teruaki Matsuura, Tokyo-To, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 27, 1968, Ser. No. 779,534
Claims priority, application Japan, Dec. 1, 1967, 42/77303
Int. Cl. H03d 3/26
U.S. Cl. 329—140 4 Claims



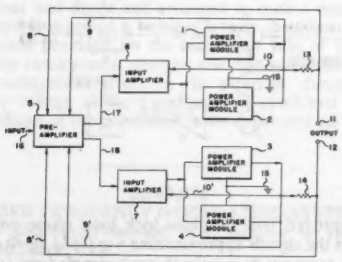
Wide band frequency discriminator apparatus is provided in accordance with the invention wherein a plurality of two terminal network means are combined with other impedance means to form four terminal circuit means which exhibit constant resistance. The four terminal circuit means are then combined with detector means to form respectively the branching circuits of wide band frequency discriminator apparatus which manifests high demodulation sensitivity throughout the frequency range thereof.

3,569,847

AMPLIFIER SYSTEM FOR DRIVING SHAKER MOTORS

Robert H. Adams, Sun Valley, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 23, 1969, Ser. No. 835,344
Int. Cl. H03f 3/18
U.S. Cl. 330—13 6 Claims



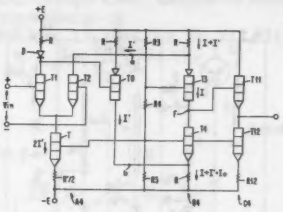
A modular bridge-type solid-state amplifier capable of delivering several kilowatts of audio-frequency power over a frequency range of zero to approximately 7,500 Hertz and which has an output impedance selectively variable from substantially zero to approximately 100,000 ohms. The amplifier employs both positive and negative feedback, with the selected output impedance being obtained by varying the amount of signal feedback to the preamplifier from the output terminals and an output current sensor. The amplifier may readily be expanded to obtain either voltage or current gain, or both, by adding appropriate modules in series and parallel arrangements, or combinations thereof.

3,569,848

UNCONDITIONALLY STABLE, OPEN LOOP OPERATIONAL AMPLIFIER

Daniel J. Esteban, La Cotiniere, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1968, Ser. No. 783,235
Int. Cl. H03f 3/18, 3/68
U.S. Cl. 330—14 2 Claims



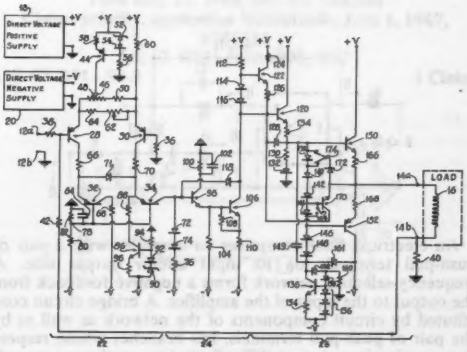
An open loop semiconductor operational amplifier having a differential amplifying input stage, an output stage having high input and low output impedance, and an intermediate stage interconnecting the input and output stage and having low input impedance and high output impedance. The three stages are collectively responsive to an applied input signal so as to maintain unconditional stability up to unity gain operation without external feedback circuitry.

3,569,849

DEFLECTION AMPLIFIER

John J. Cassidy, Newton Centre, and Melvin F. Silverstein, Holbrook, Mass., assignors to Beta Instrument Corporation, Newton Upper Falls, Mass.

Filed June 11, 1968, Ser. No. 736,186
Int. Cl. H03f 3/04, 3/68
U.S. Cl. 330—24 20 Claims

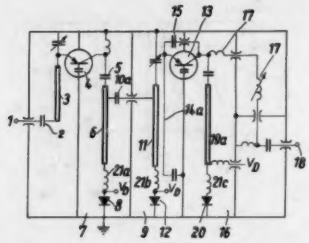


A semiconductor wide-bandwidth amplifier for driving the deflection coil of a cathode-ray tube or like electrical load employs an adjustably-coupled differential input stage and also has an electronic voltage-buffer circuit that makes efficient operation possible with the large supply voltage that drives the load. Two paths for operating power in the amplifier have complimentary effects to maintain a stable output signal when the supply voltage fluctuates. A push-pull output stage has quick bipolar limiting without semiconductor saturation and employs a constant bias to provide stable quiescent bias current during supply voltage variations.

3,569,850
HIGH FREQUENCY AMPLIFIER WITH LINE CIRCUITS

Rolf Wegener, Hannover; Werner Backnick, Bredenbeck, Hannover, and Werner Heitefuss, Hannover, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany

Filed Oct. 11, 1966, Ser. No. 585,838
Claims priority, application Germany, Oct. 13, 1965, June 8, 1966, T29565;T31320
Int. Cl. N03f 3/60
U.S. Cl. 330—56 10 Claims

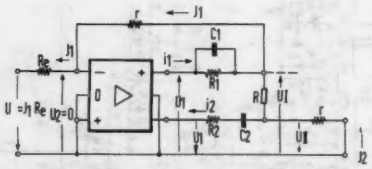


A high frequency amplifier has a line circuit which is resonant at some selected frequency, and which line circuit includes a variable capacitive diode means arranged to tune the line circuit, and a series resonant circuit which includes the said diode means and has a resonant frequency different from said resonant line circuit. The said series circuit includes an inductive means connected in series with said diode means.

3,569,851
ELECTRICAL FILTER CIRCUIT

Andreas Jaumann, Ebenhausen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Apr. 19, 1968, Ser. No. 722,601
Claims priority, application Germany, Apr. 20, 1967, S 109,429
Claims priority, application Switzerland, Jan. 26, 1968, 1,262/68
Int. Cl. H03f 3/52
U.S. Cl. 330—109 8 Claims



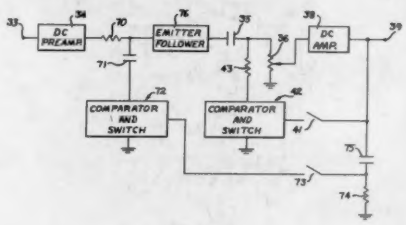
An electrical filter comprises an amplifier with a pair of push-pull terminals on its input and/or output side. A frequency-selective network forms a negative feedback from the output to the input of the amplifier. A bridge circuit constituted by circuit components of the network as well as by the pair of push-pull terminals, has branches whose respective reactive impedances differ from one another as regards their dependence upon frequency so as to conjointly define a pair of null points for the damping function of the transmitting attenuation of the filter.

3,569,852
FREQUENCY SELECTIVE VARIABLE GAIN AMPLIFIER

Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 23, 1969, Ser. No. 793,261
Int. Cl. H03f 1/26
U.S. Cl. 330—132 18 Claims

An amplifier for an electrocardiographic monitoring system. The band-pass of the amplifier is such that ordinarily all frequency components of the ECG signal are amplified to the same extent. In the presence of a low frequency noise signal which causes the output voltage to exceed a maximum limit in either direction, the low frequency 3-db. point is raised from .05 Hertz to 1.0 Hertz. This is achieved simply by lowering the time constant of a high pass filter in the amplifier. The shorter time constant reduces the effect of low frequency noise on the output voltage. While some of the low frequency components in the ECG signal are attenuated,

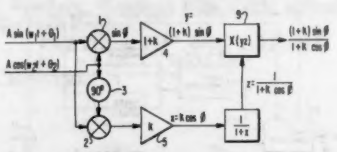


most of the usable information in the signal is retained. The shorter time constant also provides a faster recovery for the amplifier following large direct current voltage changes. This is especially beneficial when the patient electrodes of the monitoring system are switched and they induce a charge in the DC component of the ECG signal which might saturate the ECG preamplifier. Similarly, in the presence of high frequency noise signals the high frequency 3-db. point is lowered for a similar purpose.

3,569,853
PHASE-LOCK LOOP WITH TANGENT FUNCTION PHASE COMPARATOR

Chester J. Wolejsza, Jr., Rockville, Md., assignor to Communications Satellite Corporation

Filed July 1, 1969, Ser. No. 838,189
Int. Cl. H03b 3/04; H03d 13/00
U.S. Cl. 331—22 6 Claims



An improved tanlock phase-lock loop phase comparator generates the signals approximating $y = (1+k) \sin \Phi$ and $x = k \cos \Phi$ in response to a pair of input signals $A \sin (\omega_1 t + \Theta_1)$ and $A \cos (\omega_2 t + \Theta_2)$ where $\Phi = \Theta_1 - \Theta_2$. The signal $k \cos \Phi$ is operated on by a nonlinear circuit element having a transfer function approximating $1/1+x$ to produce a signal z. Signals y and z are multiplied to provide the desired output approximating the form $(1+k) \sin \Phi/1+k \cos \Phi$.

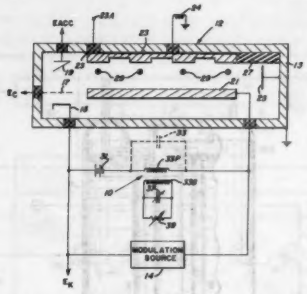
3,569,854
OSCILLATION SUPPRESSION CIRCUITRY

Merle R. Boyd, Auburndale, Mass., assignor to Raytheon Company, Mass.

Filed Apr. 15, 1969, Ser. No. 816,300
Int. Cl. H03b 1/04
U.S. Cl. 331—82 2 Claims

An oscillation suppression circuit for use particularly with

crossed-field traveling wave tubes used as backward wave oscillators, the preferred embodiment including a tuned cir-



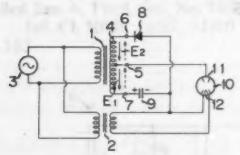
cuit, resonant at the frequency to be suppressed, which is coupled to the sole electrode circuit.

3,569,855

POWER SUPPLY FOR HEATING MAGNETRON

Tomimitsu Noda, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 3, 1969, Ser. No. 788,869
Claims priority, application Japan, Jan. 16, 1968, 43/2288;43/2289;43/2290;43/2291
Int. Cl. H03b 9/10
U.S. Cl. 331—86 **5 Claims**



A high frequency magnetron apparatus for use in heating ovens with an improved power source device which comprises a transformer for stepping up a source voltage, a magnetron disposed on the secondary side of the transformer, and a circuit positioned on said secondary side, consisting of a condenser and diode and arranged in such a manner that when there is supplied a voltage in one direction from the poser source provided on the secondary side of the transformer, the condenser is charged and that when there is supplied a voltage therefrom in the opposite direction, the secondary voltage of the transformer is combined with the charge voltage of the condenser to be impressed on the magnetron.

3,569,856

LASER FREQUENCY MODULATING SYSTEM

Stuart L. Ridgway, Princeton, N.J., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 8, 1968, Ser. No. 704,044
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 **4 Claims**

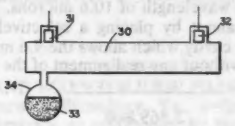
The invention is directed to an optical laser of the Fabry-Perot resonant cavity type wherein at least one of the cavity reflectors is formed from an electro-optical material shaped as an echelon. An electric modulating field is applied to the electro-optical material by placing the material in a dielectric waveguide. The modulating field causes a proportional change in the optical path length of the resonant cavity which in turn frequency modulates the output of the optical laser.

3,569,857

METHOD AND MEANS FOR ACHIEVING CHEMICAL EQUILIBRIUM IN A SEALED-OFF CO_2 LASER

John A. Macken, Orange, Calif., assignor to North American Rockwell Corporation

Filed Mar. 13, 1968, Ser. No. 712,831
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 **3 Claims**



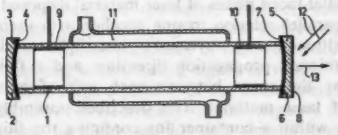
Chemical equilibrium and optimum operation in a sealed-off CO_2 gas laser is maintained by replenishing the CO_2 lost by dissociation into CO and O_2 either directly by providing a source and getter arrangement inside the laser tube or by replenishing the O_2 lost by reaction with oxygen gettering surfaces in the laser [illegible]ity by placing an oxygen yielding compound in the laser [illegible] which will react with the CO to produce CO_2.

3,569,858

DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION, AN IRASER

Wilhelmus Jacobus Witteman; Gerrit Van Der Goot, and Johannes Van Der Wal, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1968, Ser. No. 733,340
Claims priority, application Netherlands, June 1, 1967, 6707614
Int. Cl. H01s 3/05, 3/08, 3/22
U.S. Cl. 331—94.5 **1 Claim**

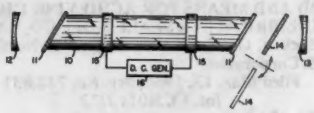


The invention provides for producing stimulated infrared emission, an iraser, by means of an electric discharge in a gas mixture partly consisting of carbon dioxide in which the discharge space is closed at one end by a concave metal mirror and at the other end by a coupling-out window which covers the whole cross section of the discharge space and also acts as a reflector, according to the invention, this window consists of a plate of zinc selenide which is coated on the discharge side with a few reflection-increasing layers and on the outer side with a reflection-decreasing material. The surface of the plate on the discharge side and the metal reflector at the other end of the discharge between the reflectors.

3,569,859
LASER SYSTEM OPERABLE AT DIFFERENT WAVELENGTHS

Wayne T. Whitney, Oxon Hill, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 13, 1969, Ser. No. 790,684
Int. Cl. H01s 3/10, 3/22, 3/02
U.S. Cl. 331—94.5 3 Claims

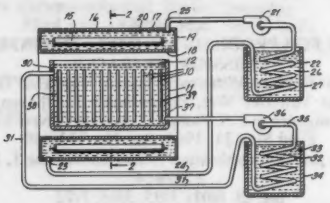


This disclosure is directed to a carbon dioxide laser which is modified to operate at a wavelength of 9.6 microns rather than at the normal wavelength of 10.6 microns. This modification is brought about by placing a selectively absorbing material within the cavity which allows the 9.6 micron transitions to dominate without any realignment of the laser cavity.

3,569,860
LASER STRUCTURE COMPRISING A PLURALITY OF LASER MATERIAL SEGMENTS FOR HIGH POWER DISSIPATION

Eugene T. Booth, Briarcliff Manor, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 384,115, July 21, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 215,669, Aug. 8, 1962, now abandoned. This application Apr. 25, 1969, Ser. No. 821,165
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 9 Claims



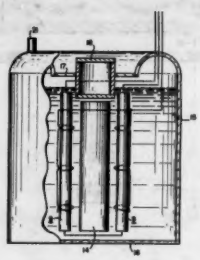
In a laser structure having means for establishing a predetermined laser light propagation direction, a series of thin parallel-faced plates of laser material disposed in closely spaced parallel relation to one another with their opposite faces positioned to be traversed by laser light travelling in the aforementioned propagation direction, and a fluid coolant occupying the space between each pair of adjacent thin plates of laser material. The described assembly may be disposed within a container for confining the fluid coolant and means may be provided for effecting circulation of the coolant through the container.

3,569,861
XENON FLASH LAMP FOR LASER PUMPING IN LIQUID NITROGEN

James W. Tucker, Alexandria, and James N. Bradford, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Navy

Original application Mar. 25, 1965, Ser. No. 442,838, now Patent No. 3,449,615, dated June 10, 1969. Divided and this application Mar. 14, 1969, Ser. No. 840,561
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 4 Claims

This disclosure is directed to a laser system including therein a flashlamp which is operable at a temperature of about −180° C. and lower. The laser lamp may be immersed

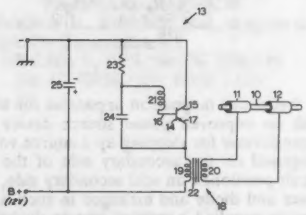


in the coolant fluid and optically coupled to the laser element which may be contained within the coolant.

3,569,862
GAS LASER EXCITER

George R. Johnson, 23 Sir Williams Lane, Toronto, Ontario, Canada

Filed June 2, 1969, Ser. No. 829,217
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 2 Claims



A gas laser having a power supply consisting of an overdriven oscillator of relatively low fundamental frequency with an output rich in harmonics. The harmonic content of the power supply output helps to initiate the excitation of the laser; after the gas has been excited the waveform of the power supply output becomes more nearly sinusoidal.

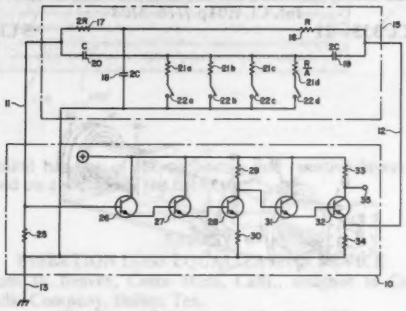
3,569,863
TWIN-T OSCILLATOR

Michael C. J. Cowpland, Ottawa, Ontario, and Harry J. Lajeunesse, Stittsville, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 13, 1968, Ser. No. 783,626
Int. Cl. H03b 5/26
U.S. Cl. 331—110 7 Claims

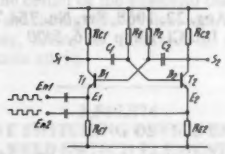
A twin-T oscillator utilizing positive feedback in which the attenuation through the twin-T feedback network is reduced

by unbalancing the components so as to provide a low impedance input side and a high impedance output side,



thereby reducing the overgain requirements of the associated amplifier.

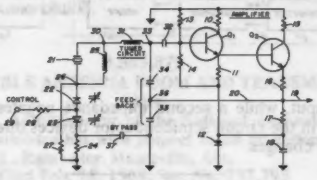
3,569,864
ASTABLE TRANSISTOR MULTIVIBRATOR FREQUENCY DIVIDER
Igor Scherrer, Colombier, Switzerland, assignor to S. A. Ebauches, Neuchatel, Switzerland
Filed Jan. 6, 1969, Ser. No. 789,205
Int. Cl. H03k *3/282, 21/00*
U.S. Cl. 331—113 **2 Claims**



A frequency divider is formed by an astable transistorized multivibrator of symmetrical construction comprising two parts. Rectangular input signals are applied symmetrically and in opposite phase to each part, and fed to the emitters of the transistors through a respective input capacitor. The multivibrator is a relaxation oscillator consisting of two NPN transistors coupled through two capacitors, so that the input of one transistor is actuated through the respective capacitor, by the output of the other transistor. The input signals may be supplied by an identical multivibrator.

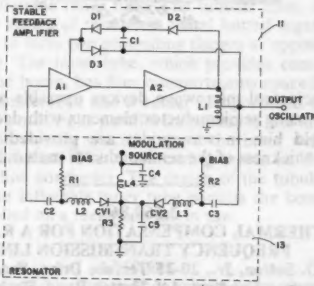
3,569,865
HIGH STABILITY VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR
Daniel J. Healey III, Baltimore, Md., assignor to the United States of America as represented by the Secretary of the Navy
Filed June 12, 1969, Ser. No. 832,767
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 **4 Claims**

A high stability voltage-controlled crystal oscillator having a series coupled emitter follower transistor amplifier with a regenerative feedback to a tuned circuit coupled to the base electrode of the amplifier, the tuned circuit having a narrow band-pass crystal filter in series with a variable capacity device and in parallel with a low Q inductance with a control voltage adapted to be coupled to the variable capacity device



to vary the capacitive reactance of the tuned circuit to produce oscillations over a limited frequency range with high stability.

3,569,866
WIDEBAND VCO WITH HIGH PHASESTABILITY
Chase P. Hearn, Williamsburg, Va., assignor to the United States of America, as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 26, 1968, Ser. No. 779,024
Int. Cl. H03b *5/12*
U.S. Cl. 331—117 **3 Claims**

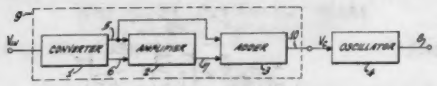


This disclosure describes a wideband voltage controlled oscillator with high phase stability. A resonator consisting of a number of identical L-C resonators reactively coupled to the input and the output of a highly phase stable amplifier is described. The resonant frequency of each resonator is controlled by applying a modulating signal to voltage variable capacitors which form a portion of the resonators. In addition, the amplifier has electrically-variable negative feedback which improves its phase stability and simultaneously provides a means for maintaining the oscillations nearly sinusoidal.

3,569,867
TEMPERATURE-COMPENSATED FREQUENCY-VOLTAGE LINEARIZING CIRCUIT
Robert L. Ernst, New Brunswick, N.J., assignor to RCA Corporation
Filed June 3, 1968, Ser. No. 733,955
Int. Cl. H03b *3/04*
U.S. Cl. 331—177 **4 Claims**

A technique is disclosed for providing a desired nonlinear output control voltage which has a continuous first derivative from a linear input command voltage. The output control voltage maintains its curvature and orientation in the presence of ambient temperature variations. This is accom-

plished by provision of a first circuit impedance which produces the desired nonlinear curvature as a



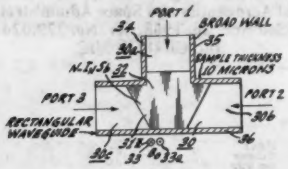
linear input, while a second impedance negates impedance changes in the circuit semiconductor devices due to the temperature changes.

3,569,868

NONRECIPROCAL MICROWAVE DEVICES USING A SEMICONDUCTOR ELEMENT

Kimio Suzuki, and Ryogo Hirota, Tokyo, Japan, assignors to RCA Corporation

Filed Feb. 25, 1969, Ser. No. 802,161
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—1.1 **7 Claims**



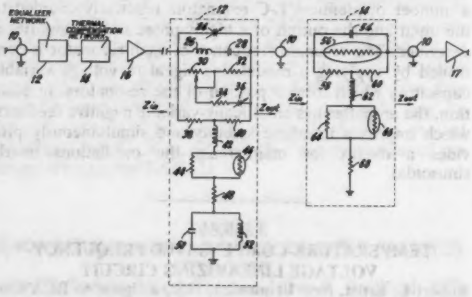
Nonreciprocal microwave devices operable at room temperature using semiconductor elements with decreased magnetic field bias in waveguides are provided herein by a reduced thickness of the semiconductor material.

3,569,869

THERMAL COMPENSATION FOR A RADIO FREQUENCY TRANSMISSION LINE

Walter O. Sutton, Jr., 20-25 Terrace Drive, Feasterville, Pa., and Norman Everhart, 440 Heaton Road, Hatboro, Pa.

Filed June 21, 1968, Ser. No. 738,918
Int. Cl. H04b *3/10, 3/14*
U.S. Cl. 333—16 **15 Claims**



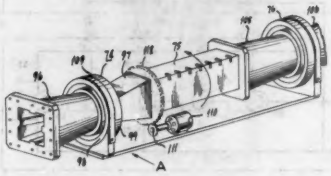
An electric network is described for compensating a transmission line system for temperature variations. Two types of compensating networks are described, one varying in response to temperature; the other in response to a pilot signal provided for this purpose. A transmission line equalizer is described in conjunction with the thermal compensation network to show the advantages of separating thermal compensation from the equalization network.

3,569,870

FEED SYSTEM

Peter Foldes, Montreal, Quebec, Canada, assignor to RCA Corporation

Original application Aug. 21, 1968, Ser. No. 754,373. Divided and this application June 11, 1969, Ser. No. 844,707
Int. Cl. H01p *1/16, 5/08*
U.S. Cl. 333—21 **5 Claims**



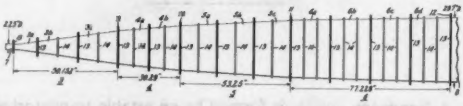
A feed system suitable for satellite communication earth station antennas and which includes a three-port polarizer assembly, multimode horn assembly and tracking difference mode circuitry is described. The three-port polarizer assembly is coupled to the horn assembly for providing full polarization mode flexibility for the sum modes. The multimode horn assembly provides excitation and control of both the sum and difference modes and inhibits the undesirable modes. The tracking difference mode circuitry is coupled to the multimode horn to process the difference modes and provide the azimuth and elevation information for monopulse tracking.

3,569,871

WAVEGUIDE TAPER OF MINIMUM LENGTH

Kiyo Tomiyasu, Scotia, N.Y., assignor to General Electric Company

Filed Aug. 22, 1968, Ser. No. 754,700
Int. Cl. H01p *1/16, 5/00*
U.S. Cl. 333—34 **7 Claims**



A low-cost waveguide taper for interconnecting two circular waveguides which differ substantially in size is constructed from a plurality of reinforced, thin-walled conical sections having predetermined taper angles and axial lengths to minimize the effects of spurious modes generated at the junctions of the conical sections.

3,569,872

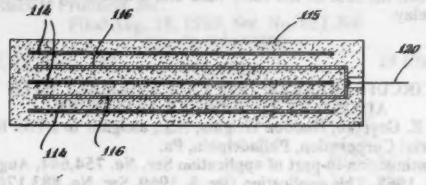
ELECTRONIC COMPONENT

Irving Berlin, Dallas, Tex., assignor to Vitramon, Incorporated, Monroe, Conn.

Continuation-in-part of application Ser. No. 665,944, Sept. 1, 1967, now abandoned. This application Nov. 27, 1968, Ser. No. 820,687
Int. Cl. H03h *7/06*
U.S. Cl. 333—70 **6 Claims**

A distributed RC component wherein alternate layers of a resistive material and a conductive material are separated by and embedded within a dielectric material. The result is a

monolithic body having both resistive and capacitive capabilities and which functions as a filter circuit, a second em-



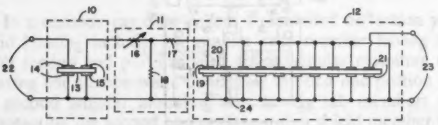
bodiment has one of the capacitive and resistive layers embedded on a surface of the dielectric.

3,569,873

INSERTION LOSS EQUALIZATION DEVICE

William D. Beaver, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Nov. 18, 1968, Ser. No. 776,497
Int. Cl. H03h *9/00*; H03h *7/08*
U.S. Cl. 333—72 **9 Claims**



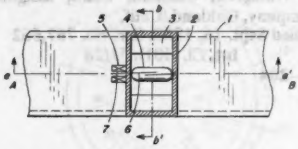
A loss equalization device comprising a piezoelectric quartz crystal plate with two pairs of metallic electrodes deposited thereon to form two coupled resonators. The structure is terminated in a resistance different from the midband impedance of the structure's passband so that there is more attenuation in the center of the passband than in the areas off the center. By cascading this device with a lossy, properly terminated filter, there is obtained a substantially flat frequency response curve.

3,569,874

MICROWAVE SWITCHING DEVICE EMPLOYING A REED SWITCH ELEMENT

Takaji Kuroda, and Yoshimi Tagashira, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 14, 1968, Ser. No. 752,636
Claims priority, application Japan, Aug. 28, 1967, 42/55,059
Int. Cl. H01p *1/10, 1/20, 7/04*
U.S. Cl. 333—73 **13 Claims**



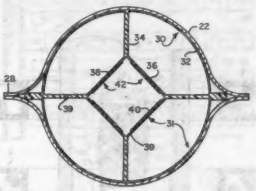
A switching device for tuning a hollow waveguide transmitting microwave signals, including a resonator comprising a section of the waveguide, a reed switch disposed in a normally open state interiorly of the resonator section, and a solenoid mounted exteriorly on the waveguide in proximity of the reed switch, the solenoid energized by a switching signal for providing a magnetic field to actuate the reed switch to a closed state to tune the resonator to a mid-frequency of a first preselected frequency band of microwave signals to reflect the latter signals in the waveguide; the solenoid deenergized in response to a discontinuance of the switching signal for terminating the magnetic field to permit the switch to return to the normally open state to tune the resonator to a mid-frequency of a second preselected frequency band of microwave signals different from the first preselected band of microwave signals to transmit the latter signals in the waveguide.

3,569,875

COLLAPSIBLE ANTENNA BOOM AND TRANSMISSION LINE

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Lawrence L. Rainwater, Huntsville, Ala.

Filed Feb. 10, 1969, Ser. No. 797,795
Int. Cl. H01p *3/06, 3/14*; H01q *1/22*
U.S. Cl. 333—96 **5 Claims**



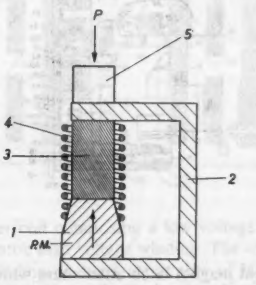
A collapsible antenna boom and coaxial transmission line having an inflatable inner tube. The tubular outer casing is made of two sheets of thin sheet metal butted together and seam welded to form two protruding flanges at opposite sides of the casing. The inner tube, which provides considerable strength to the boom, has four compartments spaced around its outer circumference and a center compartment all interconnected by ports. Four parallel transmission line inner conductors are all equally spaced around the inner wall of the center compartment. The outer casing serves as the outer transmission line conductor. The design of the tubular outer casing and the inflatable inner tube permits the boom to be folded and rolled on a reel when not in use.

3,569,876

MAGNETIC-ELECTRIC SWITCH ELEMENT

Carl-Otto Leiber, Orplid Str. 11, 7 Stuttgart-Sonnenbery, and Gunther Heimke, Neckarhauser Str. 54, 68 Mannheim-Friedrichsfeld, Germany

Filed Apr. 7, 1969, Ser. No. 813,950
Claims priority, application Germany, Apr. 6, 1968, P 17 63 130.0
Int. Cl. H01b
U.S. Cl. 335—2 **9 Claims**



A magnetic electric switch element particularly appropriate as a component for projectile fuzes or similar uses.

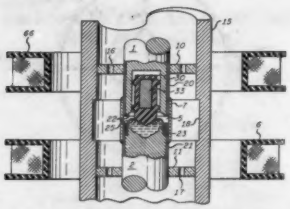
A switch element having a magnetic field has a contact bridge serving as a switching relay inserted therein which can be loaded through pressure or when under pressure it can be unloaded, made of a metal alloy with a Curie temperature which varies through pressure and when applying a certain pressure it lowers the Curie temperature from ferromagnetic into a paramagnetic condition and inversely when decreasing the pressure while increasing the Curie temperature it changes from a paramagnetic condition into ferromagnetic.

3,569,877

HIGH FREQUENCY SWITCH

Kenneth W. Robbins, Wilmington, and Gerald F. Ross, Lexington, Mass., assignors to Sperry Rand Corporation

Filed July 23, 1969, Ser. No. 843,945
Int. Cl. H01h *67/24*
U.S. Cl. 335—5 **4 Claims**



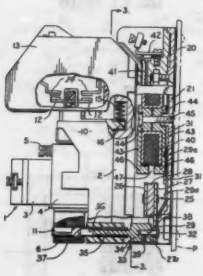
A switch for conducting or interrupting the flow of current through spaced electrical conductors which introduce a minimum impedance discontinuity and insertion loss when operating in its current-conducting mode. Rapid initiation and termination of current flow is achieved by rapidly displacing a pool of electrically conducting liquid into and out of conducting position, respectively.

3,569,878

MAGNETIC LATCH ATTACHMENT WITH RELAYS

William E. Grass, Whitefish Bay, and Robert D. Boley, Brown Deer, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed May 5, 1969, Ser. No. 821,614
Int. Cl. H01h *9/24*
U.S. Cl. 335—170 **9 Claims**



A permanent magnet latch attachment which magnetically latches an electromagnetically driven contact carrier of an electromagnetically operated switch device in an operating position against the force of a biasing spring which, when the latch attachment is rendered inoperative by energization of a release coil, returns the carrier to starting position.

A connecting pin is rotatable about an axis eccentric to its own axis adjusts the flux gap of the latch.

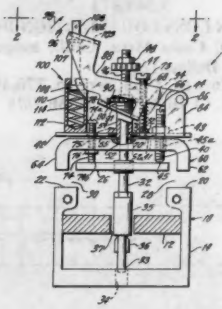
The latch attachment and release coil are mounted between the rear of the relay base and a mounting panel for the relay.

3,569,879

CIRCUIT BREAKER TRIP UNIT ASSEMBLY WITH AUXILIARY TIME DELAY ARMATURE

Carl E. Gryctko, Haddon Heights, N.J., assignor to I.T.E. Imperial Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 754,644, Aug. 22, 1968. This application Dec. 8, 1969, Ser. No. 883,176
Int. Cl. H01h *7/00*
U.S. Cl. 335—176 **7 Claims**



A circuit breaker magnetic trip unit assembly including a magnet core adjacent a conductor in the circuit being protected; a main armature which is separated by a predetermined air gap from the pole faces of the magnet core; the pole faces magnetically attract the main armature when the magnetic flux across the air gap elevates sufficiently; a separately movable auxiliary armature spaced away from the pole faces of the magnet and movable toward the pole faces upon the occurrence of magnetic attraction insufficient to move the main armature but sufficient to move the auxiliary armature; the auxiliary armature including an abutment for engaging and shifting the main armature toward the pole faces as the auxiliary armature moves until the magnetic attraction on the main armature is sufficient to pull the main armature to the pole faces; and a time delay device slowing the movement of the auxiliary armature thereby delaying tripping caused by shifting of the auxiliary armature.

3,569,880

MAGNETICALLY OPERATED CURRENT SENSOR

Wallace W. Wahlgren, Oakland, Calif., assignor to The Rucker Company, Oakland, Calif.

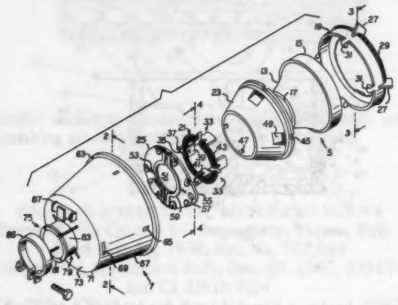
Filed Sept. 16, 1968, Ser. No. 767,562
Int. Cl. H01h *51/28*
U.S. Cl. 335—204 **5 Claims**

Magnetically operated current sensor having a reed switch and a magnetic yoke for mounting the reed switch on a conductor so that the reed switch lies in the magnetic field created by current flowing in the conductor.

3,569,881
COMBINED DEFLECTION YOKE AND HOUSING

Charles Edward Torsch, Rochester, N.Y., assignor to Sylvania Electric Products, Inc.

Filed Aug. 19, 1969, Ser. No. 851,300
Int. Cl. H01f 7/00
U.S. Cl. 335—210 25 Claims

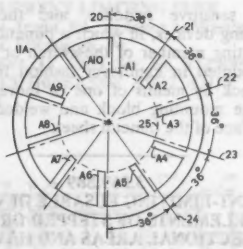


In a cathode ray tube system a combined deflection yoke and housing includes an annular core member having first and second end portions with a first annular mounting ring having ear members and contacting the first end portion and a second annular mounting ring having tab members and contacting the second end portion with a shield member surrounding the core member and affixed to the first and second mounting rings, and a plurality of wire turns wrapped in toroidal fashion about the shield and core members and first and second mounting rings. A flexible plastic body member telescopes over the shield member and first and second mounting rings and includes a large diameter portion having peripheral slots formed for engagement with the ear members of the first annular mounting ring and a small diameter portion with a planar portion formed to provide an apertured mounting ring for engagement with the second annular mounting ring and the neck portion of a cathode ray tube.

3,569,882
ROTARY INDICATOR EMPLOYING ELECTROMAGNETIC STATOR HAVING RADIALLY OFFSET POLES

Richard C. Mc Comb, Newington, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Aug. 15, 1969, Ser. No. 850,605
Int. Cl. H01f 7/14
U.S. Cl. 335—272 3 Claims

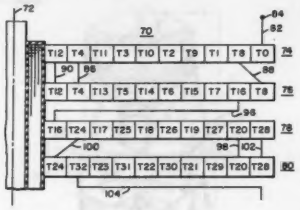


An indicator has a permanent magnet secured to a drum to form a rotor which is able to turn to 180° opposed stations to permit the successive display of diametrically opposed symbols carried on the drum. The position of the rotor's permanent magnet is governed by a stator that can establish any one of a number of differently oriented magnetic fields. The stator has an even number of uniform poles protruding inwardly from an annular core. The poles are regularly spaced around the entire annular core and are arranged in pairs whose inner ends are diametrically opposed. The inwardly protruding poles, instead of being radial, are offset from and parallel tp diametral lines dividing the annular core into equal segments. The offset arrangement of poles insures the presence of a turning force on the rotor whenever the rotor is commanded to turn to the 180° opposite station.

3,569,883
ELECTRICAL WINDING

Robert I. Van Nice, 240 Case Ave, Sharon, Pa.

Filed Sept. 15, 1969, Ser. No. 857,952
Int. Cl. H01f 15/14
U.S. Cl. 336—70 3 Claims

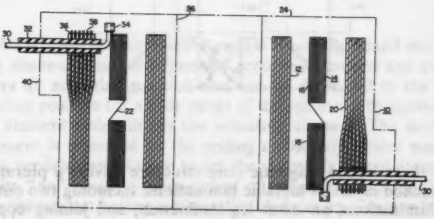


A winding for electrical inductive apparatus having a plurality of pancake coils, each of which have a plurality of turns provided by radially interleaved conductors. The first and second pancake coils adjacent the line end, or ends, of the winding, are interconnected to provide an interleaved turn, high series capacitance arrangement wherein the electrical circuit spirals inwardly in the first pancake coil and outwardly in the second. The third and fourth pancake coils are also interconnected to provide an interleaved turn, high series capacitance arrangement, but the sequence is reversed to direct the electrical circuit outwardly in the third pancake coil and inwardly in the fourth to reduce the electrical stress between the inner turns of the second and third pancake coils.

3,569,884
TRANSFORMER COIL WOUND FROM SHEET CONDUCTOR AND CAST IN A RESIN HOUSING

Leonard L. Wright, Sharon, and Paul W. Martincic, Sharpsville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

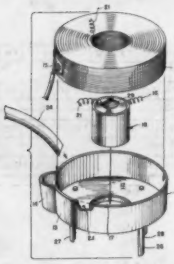
Filed Apr. 14, 1969, Ser. No. 815,743
Int. Cl. H01f 15/10, 27/04
U.S. Cl. 336—96 4 Claims



A transformer coil comprising a low voltage winding and an inner concentric high voltage winding. The windings being provided by winding on itself a plurality of layers of sheet conductor having a thin insulation coating thereon. Leads for the high voltage winding are brought out of the coil through an opening in the low voltage winding or closely adjacent the low voltage winding and the windings are cast into a resin housing so that the resin housing surrounds the windings and

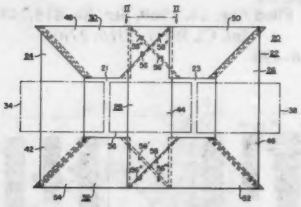
the high voltage leads. The cast resin braces the high voltage leads against the low voltage windings and provides a long leakage path from the voltage leads to points of a different ground potential.

3,569,885
METHOD OF TRANSFORMER CONSTRUCTION AND DEVICE
Raymond H. Hilgers, Roselle, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.
Filed Nov. 3, 1969, Ser. No. 873,307
Int. Cl. H01f *15/02, 27/30, 41/00*
U.S. Cl. 336—96 **7 Claims**



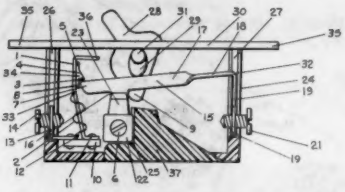
The transformer makes use of a unique cup-shaped fitting which has a central bottom opening defined by a flange made of thinner material so as to grip a primary winding in substantially fluidtight relation so that taunting compound can be effectively introduced into the fitting to complete the transformer.

3,569,886
MAGNETIC CORE STRUCTURES
Theodore R. Specht, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 24, 1969, Ser. No. 860,474
Int. Cl. H01f *27/24*
U.S. Cl. 336—217 **11 Claims**



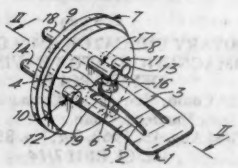
A three-legged magnetic core structure having a plurality of stacked layers of metallic laminations, including two outer leg laminations, an inner leg lamination, and joining upper and lower yoke laminations. Each layer of laminations is of like construction, utilizing laminations of like configuration and dimensions, with the layers being oriented differently to provide three layers between repeating joints. The joints at the outer corners of the magnetic core are mitered, and the joints between the yoke and inner leg lamination include a mitered and a square joint at each end of the inner leg lamination. The inner leg lamination has one end narrowed where it joins a yoke lamination with a square joint, to provide the required joint distribution between the inner leg lamination and adjoining yoke laminations.

3,569,887
TIME DELAY SWITCH
Horace D. Brown, Miami, Fla., assignor to Montec Corporation, Miami, Fla.
Filed Oct. 9, 1969, Ser. No. 865,014
Int. Cl. H01h *37/14, 37/52*
U.S. Cl. 337—77 **7 Claims**



A switch having a bimetal latch for locking a resilient contact in a closed circuit position, and a heating coil for activation of the latch to release the contact. An integral ambient temperature responsive switch energizes the coil periodically to stabilize the temperature of the bimetal.

3,569,888
THERMALLY SENSITIVE ELECTRIC SWITCHES AND ACTUATING DEVICES THEREFOR
John C. Taylor, Otters'Ole Market Street, Buxton, Derbyshire, England
Filed May 6, 1969, Ser. No. 822,175
Claims priority, application Great Britain, May 15, 1968, 23,158/68
Int. Cl. H01h *37/04, 37/54*
U.S. Cl. 337—89 **15 Claims**

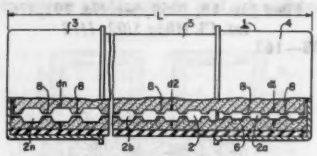


Thermally sensitive switches, and thermally sensitive switch actuating devices, in which a bimetal sheet constituting the actuating member of the switch or switch actuating device is mounted in cantilever fashion from a face of a mounting block by means of one or more metal rods embedded in the mounting block and welded, brazed or soldered to the face of the bimetal sheet.

3,569,889
CURRENT-LIMITING FUSABLE DEVICE WITH FUSABLE ELEMENTS OF STEPPED OR GRADUATED CROSS-SECTIONAL AREAS AND HAVING DENTS
Yukio Iwasaki, Amagasaki, and Shinobu Oota, Takarazuka, Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1968, Ser. No. 768,406
Int. Cl. H01h *85/08*
U.S. Cl. 337—159 **7 Claims**

A current-limiting fuse has one or more electrically parallel fusible elements, each of which has a stepped, or graduated cross-sectional diameter. In addition, each of the fusible

elements has dents provided along its axial length. Preferably, a plurality of such fusible elements are disposed



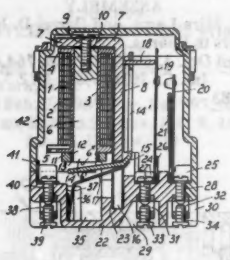
in parallel within a tubular fuse holder filled with an arc-extinguishing granular material, such as silica sand.

3,569,890

BI-STABLE MAGNETIC LATCHING RELAY

Ezio Baratelli, Via Cavour 14, Buguggiate, Varese, Italy

Filed Dec. 26, 1968, Ser. No. 787,004
Claims priority, application Italy, Dec. 29, 1967, 24517A/67
Int. Cl. H01h *9/24*
U.S. Cl. 335—170 **5 Claims**



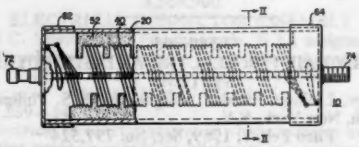
A magnetic-latching relay in which an armature is movable between a closed position engaging one end face of a core and an open position spaced from this end face and in which two windings are provided about the core, one of which provides, when energized, a magnetic field moving the armature to closed position and the other, when energized, moving the armature to open position. The relay includes further an annular permanent magnet, surrounding the end portion of the core on which the end face cooperating with the armature is provided, to keep the armature, when brought to the closed position by energizing the one winding, in said closed position even after the one winding is deenergized.

3,569,891

CURRENT LIMITING FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1969, Ser. No. 872,895
Int. Cl. H01h *85/08, 85/12, 85/14*
U.S. Cl. 337—290 **6 Claims**



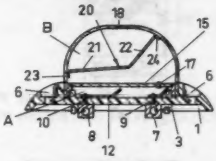
A current limiting fuse structure comprising a generally tubular, electrically insulating casing having terminal means disposed adjacent to the opposite ends thereof. One or more fusible elements are connected between the terminal means with each fusible element including first and second conductor sections of different sizes or cross-sectional areas. A pulverulent, arc quenching material is also disposed in the casing in contact with each fusible element.

3,569,892

HEAT ACTUATED CONTACT UNIT FOR ELECTRICAL FIRE ALARM SYSTEMS

Paul Henry Ripamonti, Baulkham Hills, New South Wales, Australia, assignor to Fire Fighting Equipment Pty. Limited, Ermington, New South Wales, Australia

Filed Aug. 14, 1968, Ser. No. 752,650
Claims priority, application Australia, Nov. 16, 1967, 29,962/67
Int. Cl. H01h *37/40, 37/76*
U.S. Cl. 337—320 **7 Claims**



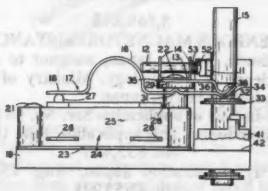
A totally sealed twin chamber thermostat for an electrical fire alarm system actuated by both slow and fast heat rise conditions.

3,569,893

POSITIVE RUN THERMOSTAT

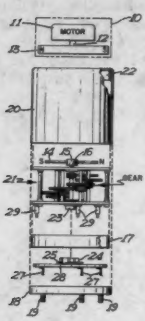
Lawrence L. Pembrook, Norwalk, Ohio, assignor to Norwalk Thermostat Company, Norwalk, Ohio

Filed Apr. 14, 1969, Ser. No. 815,862
Int. Cl. H01h *37/20, 37/52*
U.S. Cl. 337—361 **10 Claims**



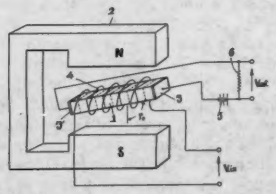
An adjustable thermostat having a thermally flexed actuating element which is adjustably positioned toward and away from an actuating position and can be displaced to the actuating position for a wide range of temperatures by means of an element which drives the actuating element. The driving element is activated by the setting of the adjustment means to a predetermined state to set the thermally flexed element to its "on" position independent of temperature. A positive run thermostat having a bimetallic blade as an actuator for a snap action switch assembly. The blade is mounted as a beam maintained against two longitudinally spaced, opposed abutments and arranged for adjustment by adjustment of the relative positions of the abutments normal to the major face of the blade. A screw adjustment means for one of the abutments is combined with an actuating finger which engages a plunger at the full "on" or positive run position to cause the plunger to engage the bimetallic blade and displace it to its switch actuating condition for all temperatures to which the thermostat is subjected.

3,569,894
MAGNETICALLY COUPLED IMPLANTABLE SERVOMECHANISM
Lee R. Bolduc, St. Louis Park, and George F. Schwoboda, New Brighton, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 14, 1969, Ser. No. 815,857
Int. Cl. H01c 1/12
U.S. Cl. 338—12 8 Claims



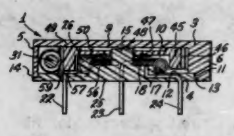
A magnetically coupled servomechanism wherein a remote magnetic device is driven by a motor and is magnetically coupled to a second rotatable magnetic device in a hermetically sealed unit for implantation in the body of an animal, which device imparts its resultant motion to an output shaft connected to a stepdown gear train having an output shaft which imparts torque to the element it is desired to rotate. The input shaft, gear train and output shaft are also in the hermetically sealed unit. The output shaft may be electrically insulated from the element to be driven, such as a potentiometer. The mechanism may be used to selectively drive more than one element, in which case a drive device is slideably mounted on the output shaft of the gear train, to be selectively slid longitudinally along the shaft to couple with the selected element for driving.

3,569,895
INHOMOGENEOUS MAGNETORESISTANCE DEVICES
Hiroyuki Fujisada, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan
Continuation-in-part of application Ser. No. 661,757, Aug. 4, 1967, now abandoned. This application June 16, 1969, Ser. No. 833,489
Claims priority, application Japan, Aug. 15, 1966, 41/53, 270, 41/53,271
Int. Cl. H01c 7/16
U.S. Cl. 338—14 10 Claims



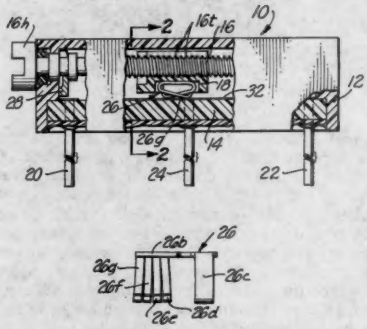
A solid state element having layer form inhomogeneities in impurity concentration is positioned within a magnetic field and experiences changes in resistance when subjected to energy in the form of a standing sound wave, a travelling sound wave, a change in direction of a magnetic field, or light in a pattern of alternating intensity.

3,569,896
ULTRATHIN MINIATURE POTENTIOMETER WITH RECESSED DRIVE WHEEL MEANS
William D. Kirkendall, Dalton, Pa., assignor to Weston Instruments, Inc., Newark, N.J.
Filed Jan. 15, 1969, Ser. No. 791,476
Int. Cl. H01c 5/02, 1/12
U.S. Cl. 338—162 6 Claims



Miniaturized variable resistors of the circular type having a drive wheel rotatable in a housing and an arcuate resistance element slidably engaged by a contact driven by the drive wheel. The drive wheel has a rim thicker than the web of the wheel and substantial portions of the resistance element are located within the rim to provide an ultrathin potentiometer.

3,569,897
POTENTIOMETER MULTI-FINGER CONTACT ASSEMBLY
David E. Laube, Mira Loma, and Darrel D. Hillman, Orange, Calif., assignors to Bourns, Inc.
Filed Oct. 3, 1968, Ser. No. 764,678
Int. Cl. H01c 9/02, 1/12
U.S. Cl. 338—183 4 Claims

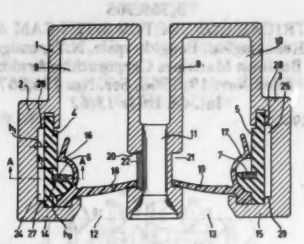


Multifinger contact and contact carrier especially adapted for use in extremely small leadscrew adjusted potentiometers having flat-surface resistance elements such as cermets and wherein available space for a contact is extremely limited, the contact comprising a collector-brushing limb and a plurality in excess of two of element-brushing limbs formed by longitudinal slit shearing of a contact strip and fanning-out or separating the element-brushing limbs or fingers by a dimpling operation, whereby each of the fingers is capable of flexing independently of the others.

3,569,898
SUPPLY RAIL FOR ELECTRICAL DISTRIBUTION SYSTEMS
Max Laser, Lidingo, Sweden, assignor to U. S. Philips Corporation, New York, N.Y.
Filed Feb. 7, 1969, Ser. No. 797,524
Claims priority, application Sweden, Feb. 9, 1968, 1762/68
Int. Cl. H01r 41/00
U.S. Cl. 339—14 4 Claims

A supply rail for use in electrical distribution systems having a pair of hollow compartments separated by a center bar.

Each compartment is provided with a slit opening for receiving a contact device. Each compartment is provided with a current bar carried on an insulated carrier body which is located on a sidewall of each hollow compartment. The carrier body abuts against abutments on said sidewall to produce



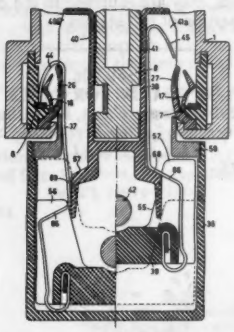
an airgap between the carrier body and the sidewall in each compartment. The airgap is available to receive at the ends of the supply rail projections of insulating material to provide a connection means between sections of a supply rail or an end cap.

3,569,899

DEVICE IN DISTRIBUTION SYSTEMS FOR ELECTRIC CURRENT

Max Laser, Lidingo, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1969, Ser. No. 797,567
Claims priority, application Sweden, Feb. 9, 1968, 1761/68
Int. Cl. H01r *41/00*
U.S. Cl. 339—14 **10 Claims**



A hollow supply rail having a current carrier therein for the distribution of electrical current. The rail has a side slit opening through which a contact device may be inserted for tapping into the carrier. The carrier is made accessible from a direction opposite to the slit opening so as to be available only to the hook-shaped contact device.

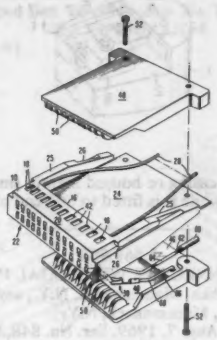
3,569,900

ELECTRICAL CONNECTOR ASSEMBLY

Edward C. Uberbacker, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,386
Int. Cl. H01r *3/06, 13/58*
U.S. Cl. 339—14 **5 Claims**

An electrical connector assembly which includes an insulator housing having a pair of parallel rows of openings passing from a front face to a back face thereof. The openings are adapted to receive terminal contacts which lock in place. The locking means between the terminal contacts and the housing are available for unlocking through adjacent access means from the top and bottom surfaces of the housing. A flat thin extension extends from the back face of the housing between the rows of the pair of rows of openings. Clamp means are provided on each side of the extension to provide



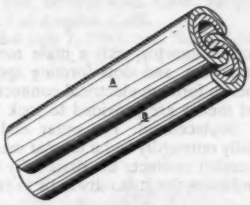
a strain relief for the wires to which the contacts are attached. The clamp means also serve as a common grounding conductor.

3,569,901

THERMAL-MATING BIMETAL ROLLPINS

John A. Connor, Tarzana, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 25, 1968, Ser. No. 770,629
Int. Cl. A44b *19/00;* **H01r** *13/20, 25/00*
U.S. Cl. 339—30 **4 Claims**



There is disclosed a set of two mutually supporting metallic elements which, when mated, form a combined structure with assured holding force sufficient to maintain good mechanical and electrical connection over a substantial temperature excursion both above and below room temperature. Each of the metallic elements consists of a fabricated bimetal rollpin which is cylindrical in shape with an incomplete circular cross section so that a pair of elements may be inserted one within the other to establish mechanical and electrical contact. Each of the elements consists of two metallic layers. The metal comprising the outer layer on one element comprises the inner layer on the other element and the metal comprising the inner layer on the first element comprises the outer layer on the second element. In this manner the two rollpins are provided with opposite or complementary thermal expansion and contraction characteristics so that the connection once made remains firm and tight independently of excursions of ambient temperature.

3,569,902

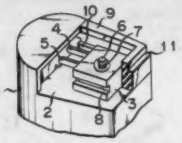
CHARGING PLUG DEVICE

Teruo Hara, Tokyo, Japan, assignor to Crown Radio Corporation, Tokyo, Japan

Filed Apr. 1, 1969, Ser. No. 811,705
Claims priority, application Japan, Apr. 1, 1968, 42/25419
Int. Cl. H01r *13/44, 29/00, 33/00*
U.S. Cl. 339—36 **3 Claims**

The charging plug device of the present invention com-

prises a casing of an electrical apparatus containing a charging means and a plug member, the pins of which can be



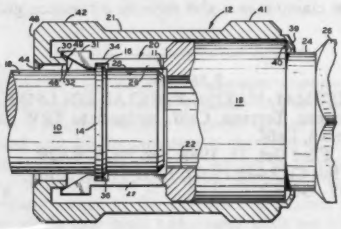
pushed out of the casing or housed therein simply by rotating the plug member while it is fitted to one end of the casing.

3,569,903

COAXIAL CONNECTOR WITH AXIAL INTERLOCK

Alexander R. Brishka, Mamaroneck, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed Aug. 7, 1969, Ser. No. 848,301
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 **8 Claims**



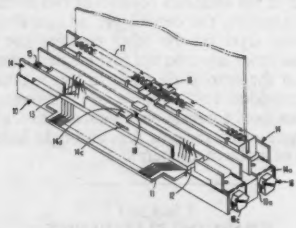
An electrical connector with a male member, a female member with a bore, and slots forming spring jaws in said female member to form an electrical connection between the members, and means are provided to lock the mated parts against axial displacement. The outer end of the bore is flared diagonally outwardly and a tubular member slidable on the female member contacts the diagonally flared outer end of the bore and cams the jaws outwardly to release the parts.

3,569,904

ELECTRICAL HOUSING AND LEVER ACTUATING APPARATUS

Cortland P. Hill, Vestal, and John R. Mankus, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1968, Ser. No. 776,454
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 **5 Claims**



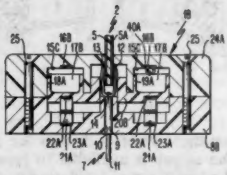
An actuating crank and electrical connector housing lever apparatus which enables (1) the holding and releasing of printed circuit cards, boards or the like, and (2) a convenient transverse insertion or extraction of the cards into and from the housing. The actuating crank features self locking within the lever and, through the camming action designed therein, can move the lever from a latched to an unlatched position or, conversely, by a cranking turn through an arc of approximately 210°.

3,569,905

ELECTRICAL CONNECTOR WITH CAM ACTION

Theoharis Kehagioglou, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1968, Ser. No. 776,867
Int. Cl. H01r *13/62*
U.S. Cl. 339—75 **6 Claims**



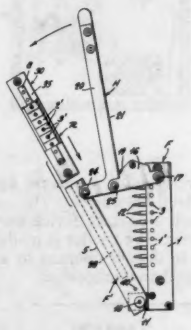
A solderless connector is disclosed for force-free insertion and removal of contact terminals of electrical devices. A plurality of contact elements are provided having split resilient and spaced diverging contact segments which are slidably mounted through apertures in a controllably reciprocable cam plate actuable for selective positioning along the extension of the contact segments. The contact segments diverge to an open position from a common bight adjacent a support to which the contact elements are mounted. When the cam plate is actuated to the upper position of the contact segments, they are deflected inwardly to bring them into contact with terminal elements of a device inserted in the connector. When the cam plate is returned to the lower position of the contact segments, they are returned to the open position for removal and insertion of the devices.

3,569,906

PIVOTED PLUG BOARDS FOR CABLE TERMINALS

Albert Cohen, 2901 Telestar Court, Falls Church, Va.

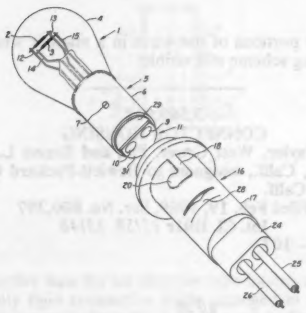
Filed Jan. 7, 1969, Ser. No. 789,571
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 **11 Claims**



A switchboard assembly embodying a fixed rack of connector terminals, to which is pivoted a movable rack of mating terminals, particularly those forming the ends of coaxial cables, which require a rectilinear movement relative to each other to effect the coupling and uncoupling therebetween. The connector terminals in both the fixed and movable racks form parts of elongate modular electric panels which are in alignment with each other in the respective racks, and which are spaced slightly from each other in each rack and are mounted on trunnions to permit them to rock slightly to ena-

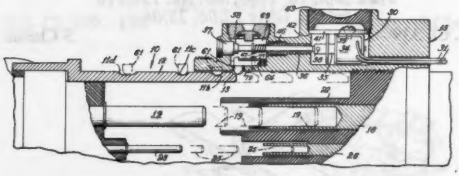
ble the mating coaxial plug and jacks terminals in the respective racks to engage and disengage each other in a rectilinear direction as the rack frames are pivoted relative to each other.

3,569,907
LAMP BASE AND SOCKET
William B. Landgraf, Cleveland Heights, Ohio, assignor to General Electric Company
Filed Aug. 28, 1968, Ser. No. 755,898
Int. Cl. H01r 13/54
U.S. Cl. 339—88 2 Claims



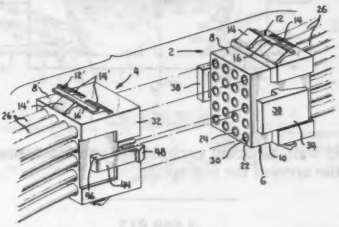
A special purpose electric lamp having a base of the bayonet type and a socket accommodating the base. A stop in the socket obstructs the insertion of a conventional bayonet lamp base into a locked position in the socket and the bayonet base of the special purpose lamp accommodates the stop in the locked position of the lamp in the socket.

3,569,908
CONNECTOR ASSEMBLY
Arthur I. Appleton, 1 Bridlewood Road, Northbrook, Ill.
Filed Dec. 11, 1968, Ser. No. 782,830
Int. Cl. H01r 13/54
U.S. Cl. 339—91 6 Claims



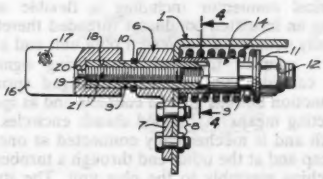
An electrical receptacle having a power energized safety-lock to prevent insertion, or withdrawal, of a second component such as a receptacle cover, or a plug for connection therewith, while the receptacle is energized. Energy for urging a plug-engaging finger into a lock position in which it can obstruct the movement of the plug in or out of the receptacle is provided by a strong spring. However, only a small amount of energy is required to maintain, or lock, the plug-engaging finger in this lock position when, as in accordance with this invention, a boltlike obstruction is moved to block the release-motion of the plug-engaging finger. The bolt is moved to its lock position by a solenoid which is energized in parallel with the receptacle contacts.

3,569,909
ELECTRICAL CONNECTOR ASSEMBLY HAVING IMPROVED LATCHING MEANS
William Joseph Garver, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 26, 1968, Ser. No. 787,007
Int. Cl. H01r 13/54
U.S. Cl. 339—91 7 Claims



Electrical connector assembly comprises a pair of matable connector parts, each of which has mounting means thereon to permit mounting in a panel opening. Each part is also provided with latching arms which are cooperable to latch the parts together. Either pair of arms can be disengaged from the other pair by depressing the arms toward the connector body, the arrangement being such that the connector parts can be disengaged from each other regardless of which part is mounted in the panel opening.

3,569,910
COMPENSABLE AND YIELDABLE KEEPER
Lloyd Richard Poe, Beverly Hills, Calif., assignor to Hartwell Corporation, Los Angeles, Calif.
Filed July 7, 1969, Ser. No. 839,569
Int. Cl. H01r 13/54
U.S. Cl. 339—91 2 Claims

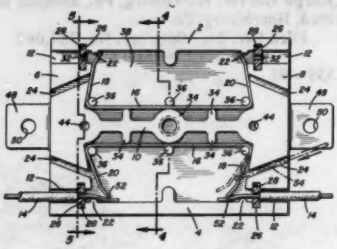


A keeper particularly adapted for multiple drawer assemblies such as used to contain electronic equipment having an elongated nonrotatably mounted and spring loaded sleeve which slidably receives a keeper fitting. A screw-threaded member is adjustably mounted in a screw-threaded bore in the sleeve and is accessible from the end of the sleeve opposite from the keeper fitting.

3,569,911
TERMINAL BOX
Raymond Bogdanowicz, 16727 Van Aken, Shaker Heights, Ohio
Filed Oct. 25, 1968, Ser. No. 770,706
Int. Cl. H01r 9/08
U.S. Cl. 339—95 4 Claims

A terminal box arrangement with an insulated housing member having side and end walls. The end walls have apertures therein, for guiding electric conductors into the housing. Mounted inside the walls of the housing is a leaf spring, the free ends of which intersect the axes of the apertures,

providing locking means for conductors entering the housing through the apertures. Tool passageways are positioned in each end wall, adjacent each of the apertures, providing access to the arms of the leaf spring.

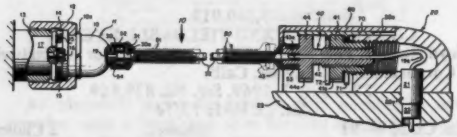


3,569,912

CONDUIT OF ADJUSTABLE STIFFNESS

Carl A. Damm, Upper Black Eddy; Albert C. Eichmann, Huntingdon Valley, and William J. Halpern, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Navy

Original application Apr. 8, 1968, Ser. No. 719,629, now Patent No. 3,504,592. Divided and this application May 29, 1969, Ser. No. 828,902
Int. Cl. H03k 17/02
U.S. Cl. 339—101 2 Claims



An electrical connector including a flexible armored sheath having an insulated conductor threaded therethrough and electrically connected between a plug unit and a breech cap which is adapted for applying a firing signal to a pyrotechnic cartridge and which has flanged spring pins formed to function both as ground contacts and as spent cartridge extracting means. A braided sheath encircles the armored sheath and is mechanically connected at one end to the breech cap and at the other end through a turnbucklelike sheath stretching assembly to the plug unit. The stretching assembly enables the braided sheath to be longitudinally stretched so that it tightly grips the armored sheath and forms therewith a more rigid conduit.

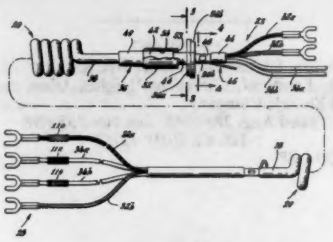
3,569,913

UNIVERSAL TELEPHONE HANDSET CORD

John C. Wolff, Cheshire, Conn., assignor to The Whitney Blake Company, New Haven, Conn.

Filed Jan. 15, 1969, Ser. No. 791,336
Int. Cl. H01r 13/58
U.S. Cl. 339—103 10 Claims

The universal telephone handset cord of the invention is adaptable for connection with telephones of different design. For use with a saddle-type handset the cord is provided with a removable sleeve for closing the handset cord opening, and one or more removable split ring washers which abut a saddle on the transmitter cup to secure the cord therein. To adapt the cord for use with a stayhook-type handset, the sleeve is removed leaving an underlying bushing to close the smaller cord opening in that type handset; also, the split ring washers which are not needed are removed. Connection with the screw in the handset is made with a stayhook secured to the end of the cord. The cord may also be provided with alternate schemes of color coding for the various telephone designs. This is done by coding the wires of the cord overall in one scheme and then superimposing a second color code scheme over portions of the wires in a manner which leaves the underlying scheme still visible.

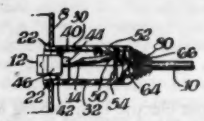


3,569,914

CONNECTOR HOUSING

Donald F. Taylor, West Grove, Pa., and Ernest L. Riberdy, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 19, 1969, Ser. No. 800,397
Int. Cl. H01r 13/58, 13/48
U.S. Cl. 339—107 5 Claims



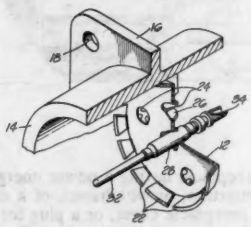
An integral piece of flexible, plastic material is molded to have hinged top and bottom members which pivot at one edge to enclose a connector. Each of the top and bottom members have complementary portions for positioning and clamping the connector adjacent to and extending through the hinge. In addition, complementary strain relief means grip the cable when the members are in a closed position.

3,569,915

GROUNDING FOIL

Stanley J. Sorensen, Sylmar, Calif., and Arvin L. Langham, Phoenix, Ariz., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 16, 1968, Ser. No. 759,910
Int. Cl. H01r 23/06, 23/08
U.S. Cl. 339—143 5 Claims



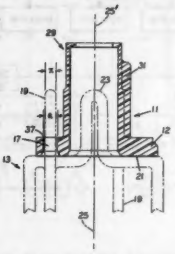
The invention comprises a grounding foil member having one or more cavities therein, formed of tangs for securing circuit elements such as filters thereto by means of direct contact. The outer edge of the foil member which contacts the inner shell of a conductor is formed of flaps bent at an angle. Each of the flaps deflect upon entering the shell which completes the electrical circuit between the filter and the

shell through the ground foil. The filter may be removed from the ground foil and the ground foil from the shell with relative ease and with no soldering required.

3,569,916
BASE FOR AN ELECTRON TUBE HAVING RETENTION PROVISIONS THEREIN

Doyle Alfred Wood, Ottawa, Ohio, assignor to Sylvania Electric Products Inc.

Filed July 22, 1969, Ser. No. 843,441
Int. Cl. H01r 13/46
U.S. Cl. 339—145 6 Claims

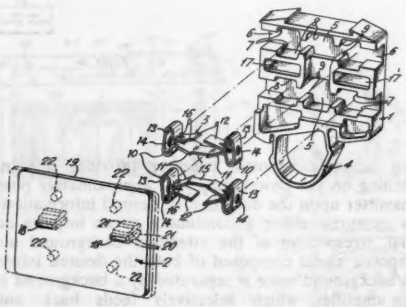


A protective base for an electron tube having a plurality of substantially rigid connective leads arranged in spaced relationship to protrude from the tube closure surface. The tube base has a plurality of perforations arrayed therein to accommodate the protrusion of the respective connective leads therethrough. At least two substantially oppositely disposed perforations in the array are formed to have at least two diverse dimensions, one dimension of which is smaller than the diameter of the respective lead protruding therethrough, to provide predetermined spaced apart regions of pressured contact and regions of noncontact with said lead to effect a retention relationship between the base and the respective connective lead accommodated therein.

3,569,917
ELECTRICAL CONNECTOR ASSEMBLY

Hermanus Petrus Johannes Gilissen, Vlijmen, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 638,802, May 16, 1967, Patent No. 774,721. This application Dec. 9, 1968, Ser. No. 782,079
Claims priority, application Netherlands, Dec. 11, 1967, 67/16,828
Int. Cl. H01r 9/12
U.S. Cl. 339—198 3 Claims



A pin block has a detachable cover which is slidable a small distance relative to the block. Pegs on the cover project between the arms of U-shaped contacts in channels of the block. To withdraw a pin from a contact, the cover is slid in the opposite direction so that the arms of the U-shaped contacts are prevented via engagement with the peg therebetween and hold them from camming engagement with projections in the channel.

3,569,918
MULTIPIECE ELECTRICAL CONTACT

Bruce K. Arnold, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

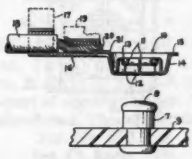
Filed Oct. 30, 1969, Ser. No. 872,568
Int. Cl. H01r 13/50
U.S. Cl. 339—214 2 Claims

A multipiece electrical contact having a mating portion, the front end of which is adapted to be interconnected with the mating portion of another electrical contact and a termination portion, the rear end of which is adapted to be secured to a conductor. One of the portions has a member extending therefrom for insertion into a bore formed at the other end of the other portion with the insertion of the member into the bore forming a tight fit. Each of the portions may contain shoulders which abut shoulders of an insulating member so that the contact may be captivated in the insulator.

3,569,919
SNAP ELECTRICAL CONNECTOR

Domenic John Daddona, Jr., Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed July 23, 1969, Ser. No. 843,951
Int. Cl. H01r 11/22
U.S. Cl. 339—258 1 Claim



A socket member for electrical connection to a projecting pin terminal is made entirely of a single piece of sheet metal. An inner wall portion is slitted to provide resilient fingers adapted to make electrical contact against either the undersurface of a bulbous head on the pin terminal or directly against the shank of the pin. An outer wall extends upwardly a substantial distance above the spring fingers and has a flat circular rim so that the socket can easily be pressed over the stud. An integral shank extends radially outwardly and has means for clamping a lead wire and a strengthening rib extends partially into the shank and also into the outer wall. In one form, a tongue may be located opposite the shank to assist in holding the socket member in a mounting block.

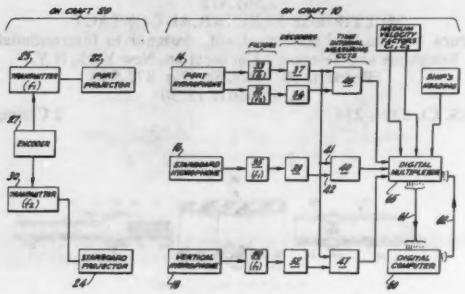
3,569,920
HEADING-SENSING APPARATUS

Herbert S. Antman, Elmhurst, N.Y., assignor to Edo Corporation, College Point, N.Y.

Filed June 6, 1969, Ser. No. 830,981
Int. Cl. G01s 3/00
U.S. Cl. 340—5 11 Claims

A heading-sensing arrangement employs spaced transmitting and receiving transducers and signal-processing ap-

paratus for determining the relative heading between two vessels displaced in three dimensions. The desired heading is computed by normalizing measured angles between the vessels to account for elevation variations.

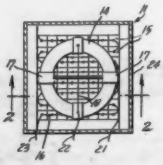


3,569,921

CYLINDER-ROD DUAL RESONANT TRANSDUCER ARRAY

Willis A. Teel, Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 13, 1969, Ser. No. 791,542
Int. Cl. H04r 17/00
U.S. Cl. 340—10 **10 Claims**



This invention pertains to a piezoelectric transducer which employs toroidal piezoelectric transducer elements and a plurality of prismatic piezoelectric rod elements in a unitary assembly. By application of predetermined driving potentials to the aforesaid piezoelectric elements, their acoustic coupling may be varied to produce a low Q combination thereof. Because the basic relationship of the two types of piezoelectric elements is modular in nature, they may also be combined to produce a variety of radiation patterns.

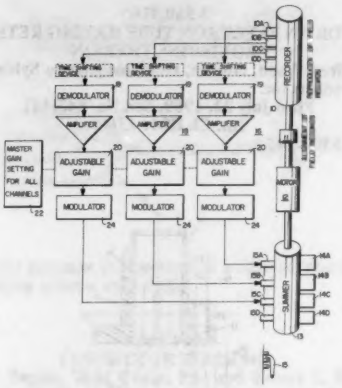
3,569,922

METHOD FOR ELIMINATING SELECTED NOISE DISTURBANCES FROM SEISMIC RECORDINGS

Josephus O. Parr, Jr., San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Sept. 30, 1968, Ser. No. 763,498
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 **6 Claims**

A method for attenuating undesirable seismic noise disturbances by providing an effective adjustable attenuation bandwidth between the attenuation afforded by the geophone spread and stacking. The attenuation bandwidth is obtained from the individually recorded seismic traces at a series of selected impact locations and by weighting the individual data according to specified formulae prior to summing the data and stacking it in a conventional manner.

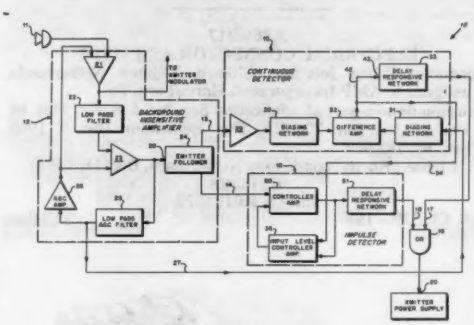


3,569,923

ADAPTIVE ACOUSTIC DETECTOR APPARATUS

Henry Naubereit, Browns Mills, N.J., and David L. Baddorf, Hatboro, Pa., assignors to the United States of America as represented by the Secretary of Navy

Filed Oct. 30, 1967, Ser. No. 679,255
Int. Cl. G08b 13/00
U.S. Cl. 340—16 **11 Claims**



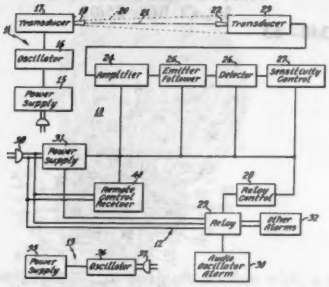
An adaptive acoustic detector provides a signal for switching on the power supply of approximately positioned transmitter upon the detection of desired information which may comprise either a continuous or an impulse acoustic signal, irrespective of the attendant background noise. A composite signal composed of both the desired information and background noise is separated by a background insensitive amplifier which selectively feeds back only the background information thereby allowing the unattenuated passage of the desired information. An appropriate detector, upon the receipt of the desired information, permits the passage of a signal indicative thereof to provide the above mentioned switching signal.

3,569,924

ULTRASONIC DETECTION SYSTEM

John E. Drake, and Dexter Benner, Jacksonville, Fla., assignors to Dexter Manufacturing Company, Jacksonville, Fla.

Filed Mar. 19, 1969, Ser. No. 808,513
Int. Cl. G08b *13/16*
U.S. Cl. 340—16 13 Claims



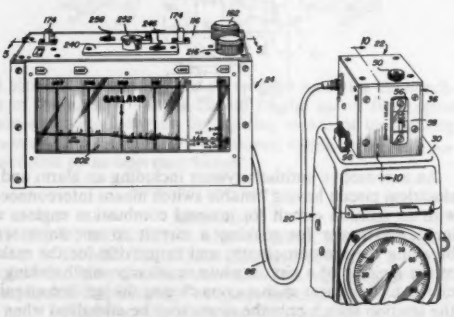
An ultrasonic detection system having a transmitter for producing a beam and receiver for receiving and converting the beam to an electrical AC signal and for amplifying the AC signal. A detector converts the amplified AC signal to a DC voltage, and a variable sensitivity control produces a voltage pulse upon a substantial change in the amplified AC signal resulting from a sufficient temporary interruption of the beam by an intruder. A relay control selectively completes the current path between a power source and a relay with the relay control being actuated upon occurrence of the voltage pulse. The variable sensitivity control includes a potentiometer for varying the bias supplied to a transistor, transistor being biased below conduction. The detector includes means for increasing the bias supplied to the transistor above conduction upon a sufficient temporary interruption of the beam by an intruder whereupon the transistor produces the voltage pulse for actuation of the relay control. The relay control includes a silicon controlled rectifier which completes the current path through the relay upon occurrence of the voltage pulse by the transistor.

3,569,925

TRAIN-HANDLING INDICATOR

Elmer Ray Tyler, 2258 S. Virginia; Charles Preuitt Battaile, 2123 Brighton Drive, Springfield, Mo., and Kenneth I. Dyche, 4513 N. "O" St., Fort Smith, Ark. 72901

Filed May 23, 1968, Ser. No. 731,385
Int. Cl. B61l *25/00*
U.S. Cl. 340—24 15 Claims



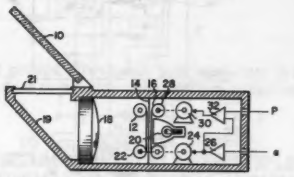
Position-indicating apparatus operably driven from a speed recorder for continuously indicating, on a profile film tape, the location of the full length of a train. The recording movement of the speed recorder is mechanically picked up by a control unit and transmitted by means of electrical impulses to a film strip actuating means for a synchronized movement of the film strip in conjunction with the travel of the vehicle. The speed of the film strip is adjustable through the control unit to bring the movement of the film strip into synchronization with the movement of the vehicle. The location indicating unit includes means for indicating the full length of the train in relation to the moving profile film tape, as well as means for varying this length indication to correspond to different length trains.

3,569,926

FLIGHT PATH AND SPEED COMMAND DISPLAY

Richard A. Korn, Burbank, and Milo E. Stormo, Granada Hills, Calif., assignors to Singer General Precision, Inc.

Filed Mar. 19, 1969, Ser. No. 808,480
Int. Cl. B64d *43/02*
U.S. Cl. 340—27 6 Claims



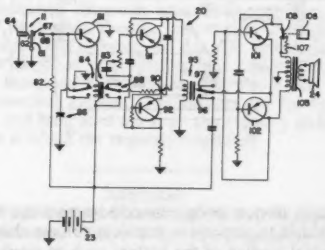
An electro-optical aircraft flight instrument that accepts input signals representing angle of attack and pitch angle and used these signals to drive servo reticles which, together with a fixed reticle, are projected at infinity upon a transparent screen in the pilot's normal line of sight. The servoed reticles display flight path of the aircraft and the angle, in degrees, between that flight path and the horizon, while the fixed reticle shows the extension of the aircraft longitudinal axis, or datum line, and a speed control which, together with the projected flight path reticle, displays to the pilot the proper landing approach speed, and warns him of a stall approach speed.

3,569,927

REVERSE OPERATION WARNING SIGNAL SYSTEM

Jay Milton Guyton, 225 E. Main St., Uniontown, Pa., and John E. Williams, Jr., R.D. 2 - Box 265, Dunbar, Pa.

Continuation-in-part of application Ser. No. 488,447, Sept. 20, 1965, now abandoned. This application June 16, 1967, Ser. No. 653,290
Int. Cl. B60q *5/00*
U.S. Cl. 340—56 11 Claims



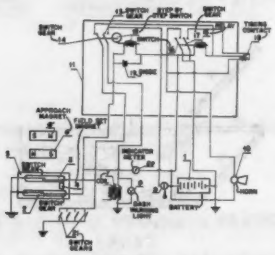
A warning signal system effective upon reverse movement of a vehicle. A sensor is mounted for free arcuate movement upon and independently of a shaft which is coupled to the speedometer cable of the vehicle for rotation therewith. Magnetic coupler means associated with the shaft effects arcuate movement of the sensor between two stop positions in accordance with the direction of motion of the vehicle.

Movement of the sensor corresponding to reverse movement of the vehicle effects energization of an electrical circuit which operates a warning device. The circuit includes means for varying the nature of the warning as well as means to return the sensor to a circuit-deenergizing position, and from which latter the sensor immediately returns under magnetic coupling if reverse movement of the vehicle continues, thereby reenergizing the warning signal circuit.

3,569,928
MAGNETICALLY ACTUATED SAFETY ALARM CIRCUIT

Alfonso Avallone, Piazza della Vittoriann. 92r, Genoa, Italy

Filed Aug. 4, 1967, Ser. No. 658,452
Claims priority, application Italy, May 31, 1967, 7041/A/67
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 6 Claims

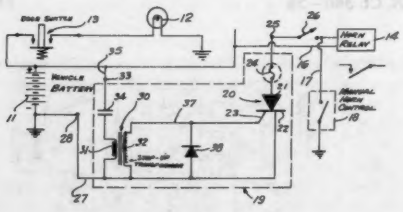


A regulating or alarming circuit controlled by magnetic fields comprising one or more protective gas glass bulb contacts having poles set by a magnet and integrated by controlling magnets which complete the quoted pole setting by the first magnet, causing the contacts to close, thereby actuating the regulating or alarming circuits.

3,569,929
TRANSIENT VOLTAGE DETECTOR BURGLAR ALARM SYSTEM FOR VEHICLES

Gene S. Wood, Project City, Calif., assignor to Alvin M. Cibula and Franklin S. Cibula, Redding, Calif., fractional part interest to each

Filed Apr. 19, 1968, Ser. No. 722,742
Int. Cl. G08b *13/00*; B60r *25/00*
U.S. Cl. 340—63 7 Claims

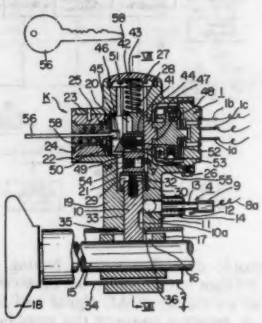


An alarm device to be connected across the battery of a motor vehicle to respond to transient voltage changes caused by electrical loading of the battery such as would be caused by energization of the vehicle door lights, brake light, or the like, and to thereby cause the vehicle horn to be energized. The device has an input circuit including the primary of a transformer. The secondary of the transformer is connected to the gate and cathode of a normally nonconducting silicon-controlled rectifier whose anode and cathode are connected in an energizing circuit containing the vehicle horn relay. The silicon-controlled rectifier is turned on in response to a transient voltage change detected by the transformer primary, thereby energizing the horn relay.

3,569,930
THEFT-PREVENTING DEVICE FOR AUTOMOBILES

Teruo Hirama, Yokohama, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama City, Japan

Filed Sept. 9, 1968, Ser. No. 758,539
Claims priority, application Japan, Sept. 23, 1967, Apr. 5, 1968, 42/60,834;43/261,740
Int. Cl. B60r *25/02*
U.S. Cl. 340—63 5 Claims

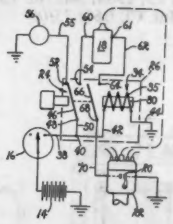


A theft-preventing device of automobiles mounted on a steering shaft casing and having a key-operated unit. The key-operated unit includes a steering shaft locking means to lock the steering shaft when said key is at a lock position, and an alarm switch to be closed unless the steering shaft is locked. A door switch is mounted on a door of the automobile, which switch is closed when the door is open. An alarm means with a power source is connected in series with the door switch and the alarm switch, so as to generate alarm sounds whenever the door is opened without locking the steering shaft.

3,569,931
AUTOMOTIVE VEHICLE ANTITHEFT SYSTEM

Benjamin Baxter, P.O. Box 448, Fowler, Calif. 93625

Filed Sept. 18, 1968, Ser. No. 760,569
Int. Cl. B60r *25/00*; G08b *13/00*
U.S. Cl. 340—64 9 Claims

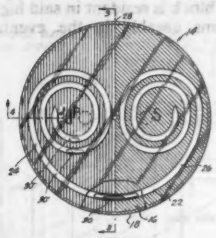


An automotive antitheft system including an alarm and an electrical circuit having bistable switch means interconnected with an ignition circuit for internal combustion engines and including means for making a circuit to an alarm while breaking the ignition circuit, and to provide for the making of the ignition of a circuit while simultaneously breaking the circuit to the alarm so that upon closing the ignition circuit at the ignition switch only the alarm may be energized when the switching device is in a first bistable position and, alternatively, only the ignition circuit may be energized when the switch mechanism is in second bistable position.

3,569,932
VISUAL INDICATOR OF DEGREE OF TURN OF A STEERING WHEEL

Dana L. Reed, Jr., 11 Walsh Drive, Dumont, N.J. 07628

Filed Aug. 4, 1967, Ser. No. 658,568
Int. Cl. B60q 1/34
U.S. Cl. 340—73 7 Claims

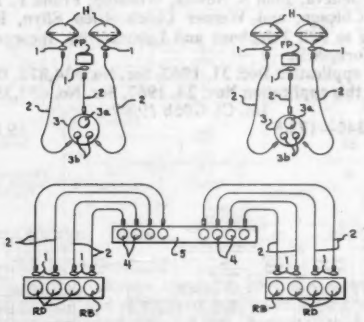


An indicator for use on, or in connection with, a steering wheel for vehicles or vessels comprising an interconnected pair of spiral channels lying on opposite sides of a rotatable disc, said disc being responsive to rotation of such steering wheel, and a gravity-responsive member freely movable in said channel.

3,569,933
SIGNALLING SYSTEM WITH INDICATING MEANS

Bruce Cameron Longenecker, and Charles Edward Reynolds, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of application Ser. No. 569,726, Aug. 2, 1966, now abandoned. This application July 29, 1969, Ser. No. 854,342
Int. Cl. B60q 1/00; G07b 5/16
U.S. Cl. 340—79 3 Claims



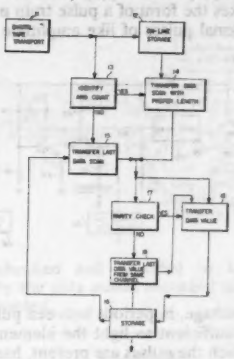
A signalling system for use on vehicles indicates the condition of the lighting system thereof by the use of fiber optic means extending between the lighting means of the lighting system and indicating means positioned within the vehicle for observation by an operator thereof.

3,569,934
METHOD OF DETECTING AND CORRECTING ERRORS IN MULTIPLEXED SEISMIC DATA

Josephus O. Parr, Jr., San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Dec. 17, 1968, Ser. No. 784,346
Int. Cl. G06k 5/00; G11b 27/36; H03k 5/18
U.S. Cl. 340—146.1 5 Claims

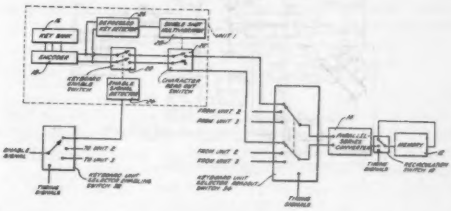
A method for the detection and correction of errors in multiplexed data whereby the data is initially identified and counted to determine whether or not there are complete sets of data and subsequent data examination to detect errors in individual bit groups. Previously validated data is substituted for incorrect data to provide a useful data collection.



3,569,935
KEYBOARD-CONTROLLED MULTIPLEX INFORMATION RETRIEVAL SYSTEM

Frank W. Sieracki, and Thomas Coombe, Berlin, N.J., assignors to Ultronic Systems Corporation

Filed Apr. 30, 1969, Ser. No. 820,593
Int. Cl. H04q 1/00, 3/00
U.S. Cl. 340—152 7 Claims



Information, such as stock market transactions, stored in a common memory, is to be displayed visually by a plurality of remotely disposed video monitors. The displays of the various monitors can be totally independent in content, but partial or complete duplication is possible. Each monitor has a keyboard associated therewith whereby the memory can be interrogated for certain specific information to be displayed by the corresponding monitor. To this end, interrogations or requests are supplied sequentially into the memory. The requests are then read out of the memory into a data processor which generates answers. The answers are fed back into the memory and then read out from the memory to the various monitors at which the requests originated.

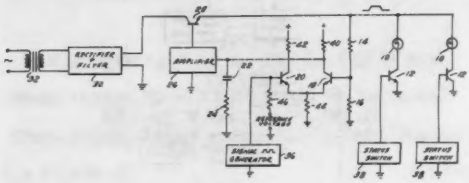
3,569,936
VISUAL INDICATOR PULSE SUPPLY APPARATUS

Ronald W. Johnson, Cherry Hill, N.J., assignor to Ultronic Systems Corporation

Filed Nov. 8, 1968, Ser. No. 774,360
Int. Cl. H04q 1/32, 5/00
U.S. Cl. 340—169 5 Claims

A visual display device is provided with a plurality of individual display elements such as lamps which are individually controlled to be either lit or dark in order to collectively present a changing pattern of dark and lit lamps which defines the display. To this end, each element is supplied with a separate control signal which has first and

second mutually exclusive values, one of which represents the "element-off" state, the other representing the "element-on" state. All elements are connected in parallel to the output of a power supply. The supply produces an energizing voltage which takes the form of a pulse train of equidistantly spaced unidirectional pulses of like amplitude and duration.



As a result, this voltage, in periods between pulses, has a first value which is insufficient to light the elements and, during the periods in which the pulses are present, has a second and higher value at which the elements can be lit. However, during the periods in which pulses are present, only those lamps which receive control signals in the "element-on" state are lit and all other lamps are dark.

3,569,937

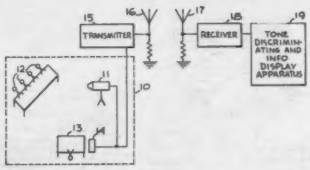
TONE SIGNAL COMMUNICATIONS APPARATUS

Merrill Heatter, 14241 Ventura Blvd, Sherman Oaks, Calif.

Continuation-in-part of application Ser. No. 517,408, Dec. 29, 1965, now abandoned. This application Nov. 6, 1968, Ser. No. 773,802

Int. Cl. H04b *7/00;* **H04q** *9/00*

U.S. Cl. 340—171 **5 Claims**



The present invention provides the means by which one or more signals can be employed to operate one or more load devices. Embodiments of the invention have widespread application, but are particularly useful in the broadcast field where these tone signals can be generated in the broadcast studio and then, via radio or television, received in the home where they can be made to operate apparatus that will display to the home listener or viewer the information represented by these tone signals. In this way, the home listener or viewer is directly involved and made a participant of the program being broadcast.

3,569,938

STORAGE MANAGER

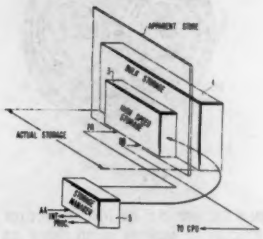
Harold E. Eden, and John J. Harmon, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1967, Ser. No. 692,007

Int. Cl. G06f *9/20*

U.S. Cl. 340—172.5 **19 Claims**

In a data processing system wherein data is stored in a large capacity bulk storage, and is processed against from a low capacity, high speed storage, a storage manager for accepting addresses from said data processing system in terms of the normal addressing capability of said system, and automatically retrieving the required data block from bulk storage to high speed storage for system processing, said storage manager comprising first means for receiving a data block address, and translating said address into a physical address for accessing said high speed storage, if said block address is presently being, or has recently been, processed against; second means for scanning said block addresses present in said high speed storage means and presenting the physical addresses of said data block for high speed storage access if said data block is resident in said high speed storage means; third means useable in the eventuality that the



desired data block is not resident in said high speed storage, for designating data storage areas in said high speed storage to receive said required data block from said bulk storage; fourth means, including bulk storage accessing means, for retrieving or inserting said required data block from or into said bulk storage to or from said high speed storage; and fifth means for setting up control information and presenting said control information to said fourth means for supervising said retrieval or insertion of said data.

3,569,939

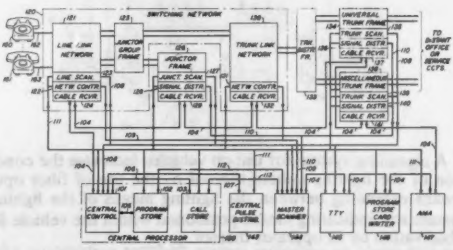
PROGRAM CONTROLLED DATA PROCESSING SYSTEM

Anton H. Doblmaier, Summit, N.J.; Randall W. Downing, Wheaton, Ill.; Michael P. Fabisch, Bronx, N.Y.; John A. Harr, Geneva; John S. Nowak, Wheaton; Frank F. Taylor, West Chicago, and Werner Ulrich, Glen Ellyn, Ill., assignors to Bell Telephone and Laboratories, Incorporated, New York, N.Y.

Original application Dec. 31, 1963, Ser. No. 334,875. Divided and this application Nov. 24, 1967, Ser. No. 685,351

Int. Cl. G05b *19/00*

U.S. Cl. 340—172.5 **19 Claims**

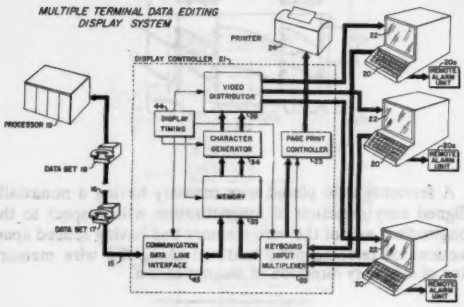


Improvements in data processor systems to increase data handling capabilities and to conserve memory space. The improvements are accomplished by parallel execution of independent data processing actions, by providing single cycle execution of functions which customarily require several program steps, and by optimizing the use of instruction code space and data space in memory.

3,569,940
REMOTE ALARM FOR VISUAL DISPLAY TERMINALS

George M. McFadden; Anthony F. Maggio, Jr., and William L. Ewing, Oklahoma City, Okla., assignors to General Electric Company

Filed June 10, 1968, Ser. No. 735,658
Int. Cl. G06f *3/04, 3/14*
U.S. Cl. 340—172.5 16 Claims

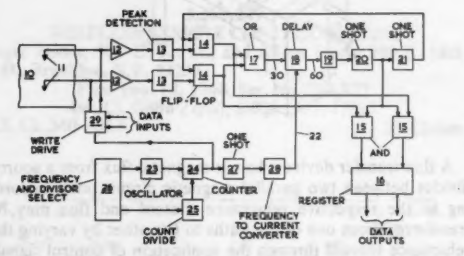


A communication network system utilizing a plurality of remotely located keyboard display terminals employing terminal alarms for indicating predetermined system conditions.

3,569,941
DIGITAL DATA STORAGE APPARATUS

Charles Passmore Randall, and John Williams, Stoke-On-Trent, England, assignors to English Electric Computers Limited, London, England

Filed July 29, 1968, Ser. No. 748,475
Claims priority, application Great Britain, July 28, 1967, 34723/67
Int. Cl. G06k *7/016;* G11b
U.S. Cl. 340—172.5 7 Claims



A digital data storage apparatus having a movable data storage surface and associated read/write heads, which includes a circuit which ensures that characters read from the surface are correctly assembled in a register by staticizing the component bits of each character and by assembling them in the register only when a time delay approximately equal to one-half of the time spacing between characters has elapsed.

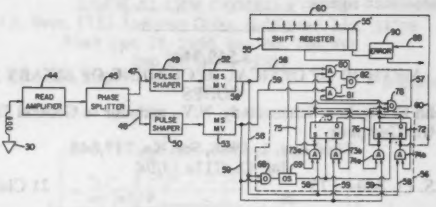
The time delay is character frequency dependent and a particular feature of the described apparatus is that it automatically provides a time delay appropriate to the character frequency being used.

3,569,942
METHOD AND APPARATUS FOR PROCESSING DATA

Raymond B. Larsen, and Wallace B. Edwards, Riverton, Wyo., assignors to Datel Corporation, Falls, Va.

Filed Aug. 12, 1968, Ser. No. 751,884
Int. Cl. G11b *5/00*
U.S. Cl. 340—172.5 18 Claims

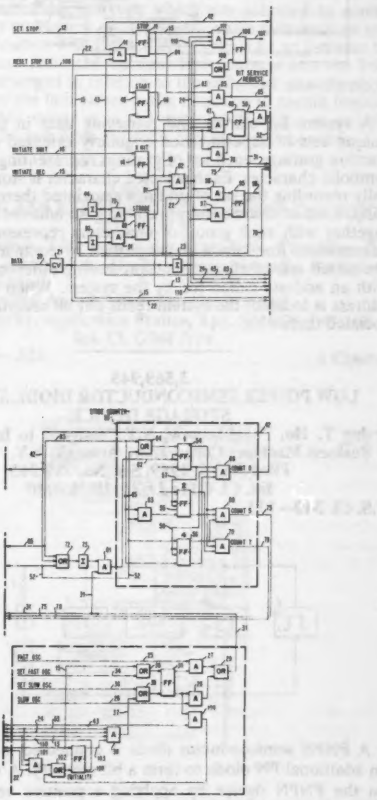
Data in binary form can be stored on a magnetic recording surface in the form of positive and negative data pulses; and when retrieved, the leading and trailing edges of each pulse are differentiated into bipolar pulses which can be simultaneously error-checked and decoded to binary 1's or 0's represented by the data pulses recorded in each block of information recorded.



3,569,943
VARIABLE SPEED LINE ADAPTER

David Mackie; Eugene E. Mallar, Jr., and Robert F. Steen, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,812
Int. Cl. G05b *11/00;* G06c *9/00*
U.S. Cl. 340—172.5 3 Claims



A variable speed line adapter for receiving start-stop data transmission is normally set for reception at one speed and will examine the starting characters of received data at that

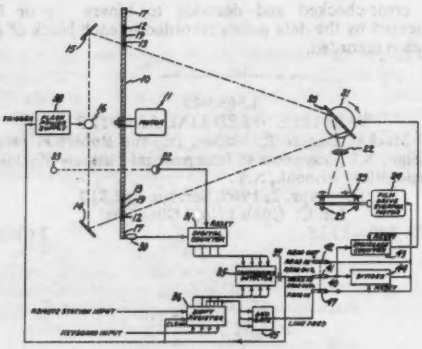
speed. If the first received character is not a complete and valid starting character for the initial receiver speed, a shift is made to another receiver speed and the next data character examined. By a proper selection of starting characters, the adapter may be switched from one speed range to another until the line adapter is set to receive at the speed of the transmitted signal.

3,569,944

METHOD OF OPTICAL RECORDING OF BINARY CODES

John E. Bigelow, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 1, 1968, Ser. No. 717,848
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 **21 Claims**



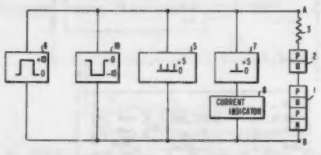
A system for storing and retrieving data in the form of unique sets of superimposed angularly oriented optical diffraction gratings, each set of gratings representing a different symbolic character. Each selected character is stored by optically recording the set of gratings associated therewith. Typically, a set of characters representing an address is recorded together with each group of characters representing stored information. Readout is accomplished by comparing quickly the stored sets of characters representing different addresses with an address called for by the system. When the desired address is located, the system reads out all recorded data associated therewith.

3,569,945

LOW POWER SEMICONDUCTOR DIODE SIGNAL STORAGE DEVICE

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,263
Int. Cl. G11c *11/36*; H03k *4/80*
U.S. Cl. 340—173 **6 Claims**



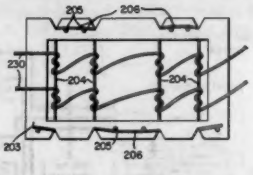
A PNPN semiconductor diode is connected in series with an additional PN diode to form a bit memory. A bit is stored on the PNPN device by applying a positive voltage sufficiently large to break down the center junction of the PNPN device and increase the minority carriers in the regions adjacent to the center junction. Repetitive small positive voltage pulses maintain the minority carrier condition as a bit memory. A large negative voltage erases the memory cell.

3,569,946

MAGNETIC MATERIAL AND DATA STORE

Wilbur G. Hespenheide, Malvern, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 25, 1958, Ser. No. 763,241
Int. Cl. G11c *11/12, 5/04*
U.S. Cl. 340—174 **1 Claim**



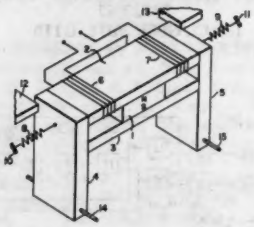
A ferromagnetic plated wire memory having a nonaxially aligned easy direction of magnetization with respect to the longitudinal axis of the wire memory and having spaced apart sections of ferromagnetic material along the wire memory free of said easy direction of magnetization.

3,569,947

MAGNETIC MEMORY DEVICE

Raymond J. Radus, Monroeville, Pa., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa.

Continuation of application Ser. No. 167,360, Jan. 19, 1962, now abandoned. This application June 16, 1969, Ser. No. 835,898
Int. Cl. G11c *11/52*; H01h *51/22*; H01f *7/13*
U.S. Cl. 340—174 **17 Claims**



A flux transfer device wherein magnetic flux from a source divides between two parallel magnetic circuit paths according to the respective reluctance thereof and flux may be transferred from one of the paths to the other by varying the reluctance thereof through the application of control signals to control windings disposed in the respective magnetic circuit paths.

3,569,948

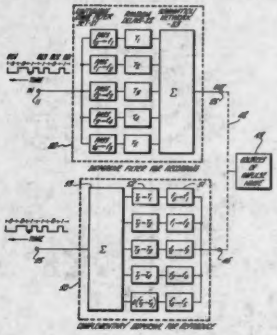
HIGH BIT DENSITY RECORD AND REPRODUCE SYSTEM WITH SELECTED FREQUENCY BAND COMPONENT DISPERSAL

Kermit A. Norris, Azusa, Calif., assignor to Subscription TELEVISION, INC., New York, N.Y.

Filed Aug. 23, 1967, Ser. No. 662,639
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 **15 Claims**

A method and apparatus is disclosed which avoids bit dropout and dropin problems associated in magnetic medium recording by resolving the random multilevel signal inputs characteristic of digital data into a plurality of selected frequency band components. These selected frequency band components are each subjected to a different time delay which relative time delays are selected at random. A signal summation circuit sums the delayed frequency band components and the summation signal is recorded in assigned

spaces on a single data track on a magnetic medium as a slowly varying nonsaturable analog signal. This method and apparatus as disclosed thus disperses in a single data track the information content of several data bits over a considerable length of the magnetic medium rather than confining them to sequential bit cell intervals. Accordingly, any spurious signal variation for a short duration of time, as normally characterized by a dropout or a dropin, results in a loss of only a few frequency cycles of several frequency band components which compose the information content of many



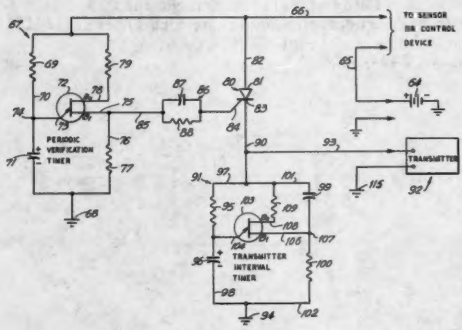
data bits with the result being that extremely high bit rates are possible with virtually no probability of a bit dropout or a bit dropin. Reproduction of the binary data is accomplished through the use of a complementary frequency band dispersive circuit. In a further nonlimiting embodiment wherein the magnetic medium may vary in speed relative to the record and reproduce circuits, an intermediate record and reproduce device is employed which is responsive to such speed variations so as to continually assure precise spatial separation of the frequency band components on the magnetic medium.

3,569,949

WIRELESS REMOTE CONTROL SYSTEM

Roger Isaacs, 953 E. 9th St., and Albert Stern, 929 E. 18th St., Brooklyn, N.Y. 11230

Filed Feb. 12, 1968, Ser. No. 704,877
Int. Cl. G08b *21/00*; H03k *5/00, 17/00*
U.S. Cl. 340—213 **29 Claims**



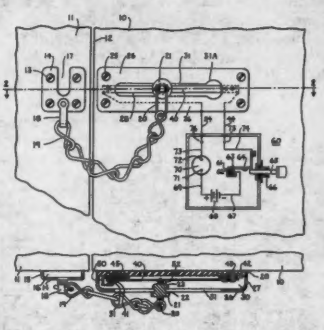
This invention is concerned essentially with a wireless remote control system embracing a signaling station and a robot or operating station, both jointly and severally, wherein a remotely located signaling station transmits intermittent signals responsive to manual actuation or actuation of a sensor or other control device, and the operating station operates continuously in response to the received intermittent signals, ceasing operation only upon termination of the signals.

3,569,950

LOCK-ALARM COMBINATION

Paul L. Betz, 1113 Angonne Drive, Baltimore, Md. 21218

Filed Apr. 29, 1968, Ser. No. 724,981
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **3 Claims**



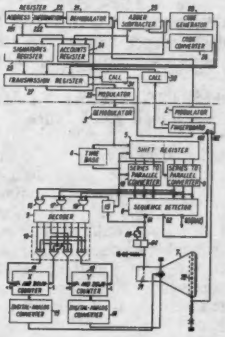
A chained bolt door fastener and alarm system has alarm energizing electrical contacts which are actuated to sound the alarm by movement of the slidable chain bolt from an initial preset position when an attempt is made by an intruder to open the door from the outside. The contacts and the bolt may be so arranged in relation to the slide that unauthorized movement of the bolt either in the direction to permit limited opening of the door, or in the opposite direction to enable removal of the bolt from the slide, will energize the alarm.

3,569,951

SCANNING AND RECEIVING STATION FOR GRAPHIC SYMBOLS

Jean C. Lavenir, 144 Avenue des Etats Unis, Versailles, assignor to Jean-Claude Merlin, 1 rue Marcelin Berthelot, Vanves, France

Filed Apr. 2, 1969, Ser. No. 812,640
Claims priority, application France, Apr. 5, 1968, 147,198
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 **4 Claims**



A system for viewing graphic symbols and graphs on the screen of a cathode-ray tube. The graphs are drawn by giving the spot incremental movements along quantified directions or vectors and the incremental advance of the spot is caused by sending to the receiving end of the system binary digit vector words defining the quantified directions. The informa-

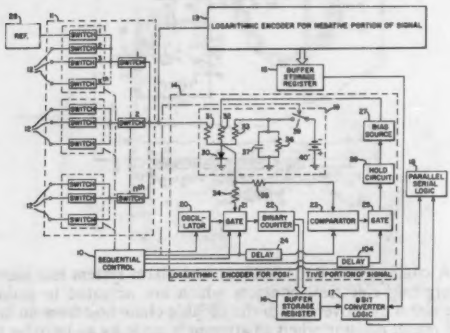
tion relative to the illumination or extinction of the spot is transmitted not by a supplementary bit but by means of a particular combination of two vector words. This combination is a succession of two vector words defining vectors of the same and opposite direction.

3,569,952

TIME DIVISION MULTIPLEX SYSTEM AND A LOGARITHMIC ENCODER FOR HIGH SPEED MULTIPLEX OPERATION

Hans R. Schindler, Syracuse, N.Y., assignor to General Electric Company

Filed Dec. 12, 1967, Ser. No. 689,888
Int. Cl. H03k *13/16*
U.S. Cl. 340—347 **4 Claims**



A time division multiplex system and a logarithmic encoder for high speed multiplex operation is described. By means of a switching network, the system continuously samples a large number of amplitude information signals, typically voice signals, available on separate input channels and encodes them by a logarithmic law into a binary coded form. The coded groups are applied to a common output channel in the time division multiplex format.

The encoder is logarithmic, employing a tunnel diode threshold device for comparing the sampled input signal with a repetitive wave of internal generation having an exponentially decaying waveform.

A servo network is further provided for stabilizing the encoding tunnel diode against thermal variations and other factors.

3,569,953

WIDE RANGE ANALOG TO DIGITAL CONVERTER

Donald G. Shuda, Clarence Center, and Donald L. Starkey, North Tonawanda, N.Y., assignors to Sylvania Electric Products Inc.

Filed Mar. 25, 1968, Ser. No. 715,625
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 **9 Claims**

An analog to digital converter for logarithmically quantizing an analog input voltage, which may vary over a wide dynamic range, and providing a representative binary-coded decimal readout. The analog input voltage is processed through parallel strings of serially connected logarithmic amplifiers, the individual outputs of which are connected to respective threshold detectors at the parallel inputs of a shift register. Upon command, shift pulses are applied to the register to generate a serial output which is applied to a binary counter for readout.

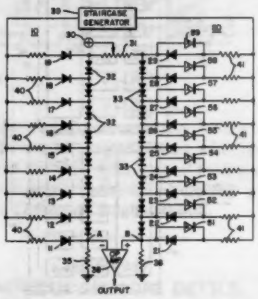
3,569,954

ANALOG COMMUTATOR

Charles A. Glorioso, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 23, 1968, Ser. No. 731,389
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 **10 Claims**

An electronic commutator for converting low-level parallel binary input signals into an amplified, permutation-coded, serial-output, signal train includes a reference diode array and an input diode array, with the diodes of each of the arrays being variably reversed-biased, and with the diodes of the input array each being shunted by a reverse-connected photovoltaic cell. A staircase scanning voltage is applied to the diode arrays in the forward direction, and the diodes of each array conduct in a step-by-step fashion; but in the absence of any input signal causing a photovoltaic diode to conduct, the output of the reference array always is higher than that of the input array due to the manner in which the reverse-bias initially is adjusted. This causes a first output always to be obtained from an operational amplifier operated



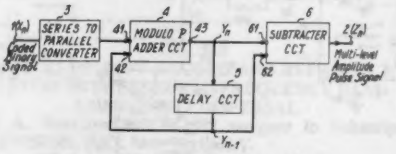
in its saturation-to-saturation mode and supplied with input signals from each diode array. Whenever a photovoltaic cell for a given level of the input array is illuminated, however, it generates sufficient current, when the diodes for that level of the two arrays are rendered conductive, to overcome the imbalance in favor of the reference array, causing a higher output voltage for that level to be obtained from the input array. This, in turn, causes a second output to be obtained from the operational amplifier. The output obtained from the operational amplifier, as a result, is a permutation-coded serial signal corresponding to the parallel signal applied to the photovoltaic diodes.

3,569,955

METHOD AND DEVICES FOR CONVERTING CODED BINARY SIGNALS INTO MULTILEVEL SIGNALS AND FOR RECONVERTING THE LATTER INTO THE FORMER

Maurice A. Maniere, Paris, France, assignor to Lignes Telegraphiques Et Telephoniques Styled L. T. T., Paris, France

Filed Oct. 11, 1968, Ser. No. 766,823
Claims priority, application France, Oct. 12, 1967, 124171
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 **4 Claims**



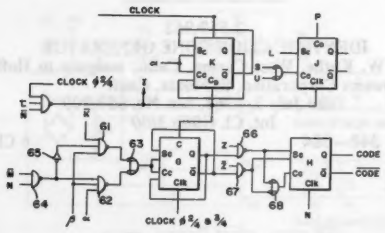
Code converter for converting a first sequence of coded binary signals x_n, each of said signals being formed of m bits, having a given duration and being capable of taking 2^m possible values, into a second sequence of multilevel signals z_n whose amplitude has $(2^{m+1}-1)$ possible levels proportional to the series of integers from $-(2^m-1)$ to $+(2^m-1)$ including zero. The converter comprises a register for supplying the signals x_n of the first sequence, a modulo p adder circuit where $p=2$ having a first input connected to the register and a second input, said modulo p adder circuit generating a third

sequence of m-bit binary signals y_n, a nonborrow subtractor circuit having a first input being connected to the output of said adder circuit and a second input, a delay circuit having an input connected to the output of the adder circuit for delaying said signals y_n by the duration of the signals x_n and thereby delivering the signals y_{n-1} at the time of occurrence of the signal x_n and an output connected to the second input of both said adder circuit and subtractor circuit. The nonborrow subtractor circuit provides a sequence of m-digit signals whose digits are -1, 0 and $+1$. Each digit of said m-digit signals is multiplied by a coefficient equal to the weight thereof to obtain multilevel components relative to each of said digits and these components are algebraically added. Means for reconverting the multilevel signals z_n into the coded binary signals x_n are also described.

3,569,956
MINIMAL LOGIC BLOCK ENCODER

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and James O. Duffy, Pasadena, Calif.

Filed Oct. 30, 1968, Ser. No. 771,760
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 **10 Claims**



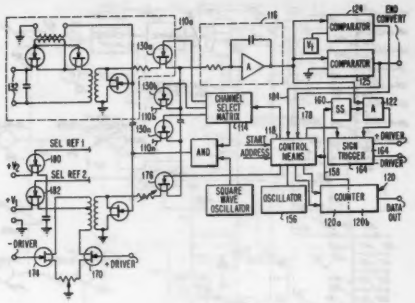
An encoder incorporating a minimum number of logic circuits to convert 64 6-bit data words into 64 32-bit code words, forming a 32, 6 biorthogonal code. Each code bit, generated during a multiclock-period-code-bit-period, is logically combined, at the end of the code bit period, with a code bit of a comma free vector code to produce a code bit of a code word in a 32, 6 comma free biorthogonal code. The encoder implements an algorithm in accordance to which each of the six data word bits is incorporated in a modulo-2 summation, as a function of the code-bit number and number of logic ones in the code-bit number in binary form.

3,569,957
ANALOG TO DIGITAL CONVERTER WITH ISOLATED INPUTS

Robert J. Masterson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,215
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 **9 Claims**

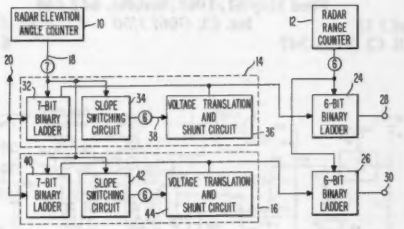
An analog to digital converter with isolated inputs is provided wherein each of a plurality of input signal channels comprises a transformer and a source of input signals. A second transformer is coupled between the first transformer and the source of input signals and a source of pulses is coupled through the second transformer to actuate a chopper means for producing a modulated signal proportional to the input to the secondary of the transformer. The modulated signal from a selected channel is coupled to an integrating means for a predetermined time as a digital signal generating means is actuated. At the expiration of the predetermined time the polarity of the input signal is detected and a reference voltage input channel is energized to couple to the input of the integrator a reference voltage of the opposite polarity to the input signal while the digital signal generating means is actuated. When the output of the integrator reaches its initial level, the digital signal generating means then holds the digital representation of the input signal.



3,569,958
POLAR-TO-CARTESIAN, DIGITAL-TO-ANALOG CONVERTER

Claude D. Gabriel, King of Prussia, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 13, 1965, Ser. No. 495,634
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 **8 Claims**



The present disclosure describes a code converter which converts directly from polar digital information to cartesian analog information by continuously adjusting the resistances of a weighted-resistor binary ladder that performs the digital to analog conversion.

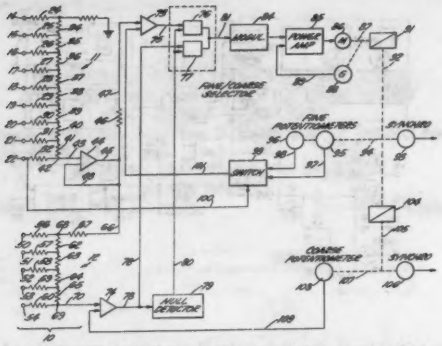
3,569,959
DIGITAL TO ANALOGUE SERVOSYSTEM

Shingo Arase, and James B. Briggs, Los Angeles, Calif., assignors to Hoffman Electronics Corporation, El Monte, Calif.

Filed June 14, 1966, Ser. No. 557,509
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 **18 Claims**

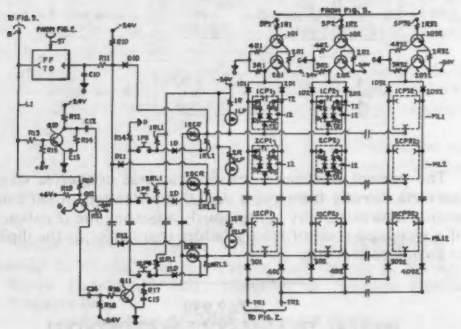
There is disclosed herein a digital to analogue converter particularly useful in radio air navigation systems. The converter includes a ladder network of weighted impedances having an output coupled to an amplifier for providing a fine analogue output, and having an output for providing a coarse and fine output. Also disclosed is a servosystem which may include the converter as its input to receive the digital information, and which includes fine and coarse servoloops. One of the loops includes a motor for driving output gearing which serves to intercouple the loops mechanically to provide a precision output and to provide feedback for each of the two loops. The ladder network includes electrically weighted networks providing a predetermined electrical ratio with respect to the digital inputs, and the mechanical inter-

coupling of the servoloops includes gearing having a ratio proportional to the electrical ratio. Additionally, a potentiometer circuit including potentiometers and switching



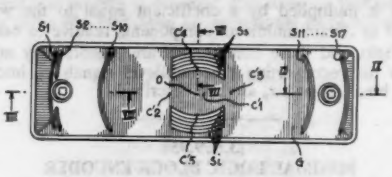
means coupled therewith is disclosed which enables the potentiometers to rotate continuously and eliminate transients occasioned by the potentiometer wipers crossing the resistive gaps thereof.

3,569,960
CODED BINARY SYMBOL GENERATOR
James T. Neiswinter, Garden City, N.Y.; Carl N. Pederson, Westmont, and Peter G. Angelopoulos, Westchester, Ill., assignors to the Pioneer Electric and Research Corporation, Forest Park, Ill.
Filed May 31, 1967, Ser. No. 642,449
Int. Cl. G06f *3/00*
U.S. Cl. 340—347 **6 Claims**



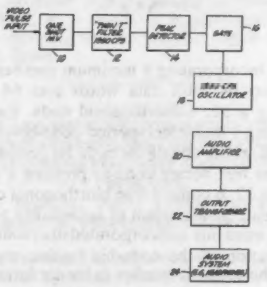
A voltage divider network with means for selectively and sequentially interconnecting resistors of various ohmic values in one leg thereof to provide discrete voltages, each one of which voltage is associated with a corresponding resistor value. The discrete voltage levels are detected and converted to a binary coded output in accordance with an intelligible encoding of the resistors. For such encoding the different resistor values and discrete voltage steps used are equal in number to the binary code which is to be generated. For example, for a binary code of 2 to the second power (2^2), 4 resistors are selectively insertable in the voltage divider network and four different voltage levels detected. For a binary code of 2 to the fourth power (2^4), 16 resistance values and voltage levels are utilized. In order to minimize the number of different resistance values and voltage levels needed for a given binary code level, more than one voltage divider with its associated resistors and voltage level detectors may be utilized and "read" simultaneously.

3,569,961
SIGNALLING INDICATOR LENS FOR MOTOR VEHICLES
Jacques Ricard, Fontenay sur Bois, France, assignor to Projecteurs Cibie, Bobigny, France
Filed Apr. 14, 1969, Ser. No. 815,539
Claims priority, application France, Apr. 26, 1968, 149639
Int. Cl. G08b *5/36*
U.S. Cl. 340—383 **5 Claims**



A motor vehicle signalling indicator having on the internal surface of its transparent or translucent window at least one group of concentric arcuate ridges. One side of each ridge is located on a conical surface the apex of which is outside the plane and spaced from the front to rear central window of the axis of the indicator.

3,569,962
IDENTIFICATION TONE GENERATOR
Robert W. Kuthe, West Covina, Calif., assignor to Hoffman Electronics Corporation, El Monte, Calif.
Filed July 3, 1967, Ser. No. 650,909
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 **6 Claims**

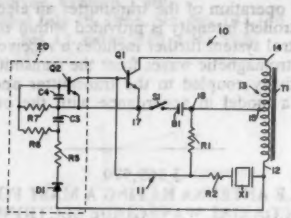


In a TACAN system a peak detector senses the filtered output of a one-shot multivibrator and energizes an audio oscillator whose output is fed to the audio system of an aircraft.

3,569,963
AUDIBLE ALARM UNIT
Henry R. Mallory, Greenwich, Conn., and Sherwood S. Thaler, Spring Valley, N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Continuation of application Ser. No. 621,596, Mar. 8, 1967, now abandoned. This application Oct. 6, 1969, Ser. No. 866,093
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 **2 Claims**

A piezoelectric electroacoustical transducer is in series with the feedback path of a compact, encapsulated audio oscillator operating on a voltage compatible with those produced by a single electrical cell. The necessary voltage

stepup for the transducer is obtained by a feedback transformer. Internal pulser circuits provide an output tone which



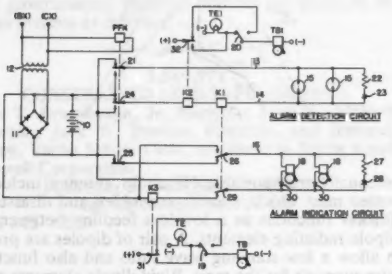
is interrupted at a subaudio frequency. Provision is made for an internal power source and for an internal sensor switch.

3,569,964

SUPERVISORY ALARM SYSTEMS

Irving Mande, Westport, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

Filed May 16, 1968, Ser. No. 729,768
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 **8 Claims**



A supervisory alarm system is disclosed for a normally supervised alarm detection circuit actuated in response to energization from a commercial source of power. A plurality of alarm condition sensing devices is connected in multiple in the circuit and includes supervisory and alarm detection means including supervisory and alarm relays connected in series in the circuit for respectively sensing trouble and alarm conditions. Power failure detection means responsive to the failure of the source of power deenergizes the supervisory relay until power from the commercial source is restored and a control means is effective in response to the power failure detection means for energizing the circuit from a standby battery.

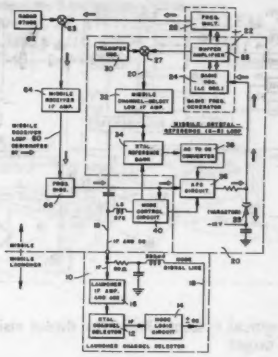
3,569,965

MULTICHANNEL FREQUENCY-SELECT SYSTEM

Michael T. Bagley, West Covina, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed July 18, 1969, Ser. No. 843,118
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 **4 Claims**

A multichannel frequency-select system which allows for operation of a remotely-controlled device, for example a missile, at various frequencies, e.g. radar frequencies. In the missile, there is located a crystal bank capable of generating a set of reference frequencies one at a time, each crystal of which holds a basic oscillator in a standby position. An automatic frequency control (AFC) circuit in the missile provides a two-speed sweep-ramp voltage for changing the frequency of the basic oscillator by controlling a voltage-sensitive capacitance or varactor, in the tank circuit of the basic oscillator. A channel selector unit based in a missile launcher provides means to select the desired channel of operation in the



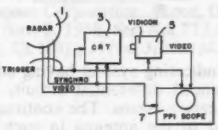
remotely-controlled device by furnishing the proper mode voltages, which are related to the sweep voltages, in the device at a precise time.

3,569,966

TIME COMPRESSION OF RADAR VIDEO

William J. Dunn, Margate City, and Edward M. Sawtelle, Ventnor, N.J.

Filed June 3, 1969, Ser. No. 829,998
Int. Cl. G01s *9/04*
U.S. Cl. 343—13 **11 Claims**



A system for achieving radar video sweep time reduction in order to provide more time to write alphanumerics on a radar PPI display. The system utilizes analogue or digital techniques for the time compression which is accomplished by storing the radar video and subsequently reading out the stored information for display. When less time is utilized for reading out the information than the time required to store the information, time compression of the radar video occurs.

3,569,967

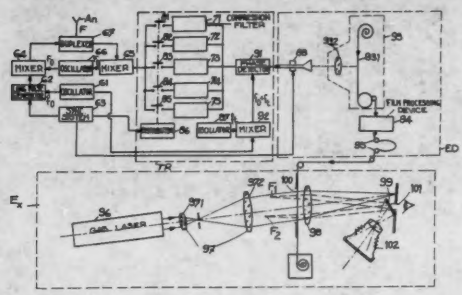
ECHO PROCESSING APPARATUS OF SIDE LOOKING DETECTION SYSTEMS OPERATING WITH FREQUENCY MODULATED TRANSMITTED PULSES

Robert Jules Gendreu; Jean Andre Lemoing, and Guy Francis Le Parquier, Paris, France, assignors to Thomson C.S.F., Paris, France

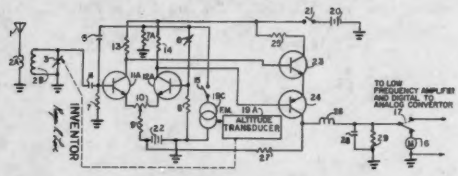
Filed Dec. 6, 1968, Ser. No. 781,885
Claims priority, application France, Dec. 13, 1967, 132,111
Int. Cl. G01s *7/28*
U.S. Cl. 343—17.2 **6 Claims**

In a moving side-looking coherent detection system, wherein the transmitted pulses are linearly frequency modulated, the echoes are submitted to a compression which is a function of the range of the target from which they originate, and by means of which the recording of the echoes on a photographic film displaced at a speed proportional to that of the system, supplies, for each echo, a pattern similar to that

of a Newton ring; the observation of that pattern with a coherent and plane luminous wave and an appropriate conventional optical system allows the direct vision of the position of the target.

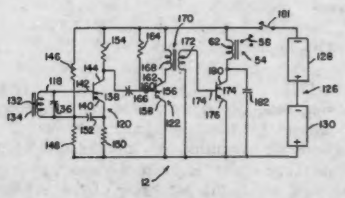


3,569,968
PROXIMITY INDICATING MEANS
Roger Ross Love, 89 Brook Lake Road, Florham Park, N.J.
Filed Oct. 14, 1968, Ser. No. 767,361
Int. Cl. H04b *7/00;* **G08g** *5/04*
U.S. Cl. 343—100 **13 Claims**



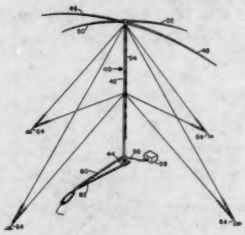
A proximity indicating system having an RF transmitter, a normally balanced differential circuit, a tuned antenna circuit, and indicating means. The continuously transmitted signal is applied to the antenna in such a manner as to maintain the differential circuit in a balanced condition, while simultaneously received signals of the same frequency coming from other systems within operating range cause an unbalance in the differential circuit which is detected by the indicator. When the system is used with aircraft, the transmitter may be frequency modulated and the antenna circuit tuned in accordance with the aircraft altitude.

3,569,969
MAGNETIC INDUCTION, AUDIOFREQUENCY SELECTIVE, REMOTE CONTROL SYSTEM
John W. Lemon, Jr., 712 Princeton Road, Berkley, Mich.
Filed Feb. 17, 1964, Ser. No. 345,380
Int. Cl. A63h *33/26;* **H04b** *7/00*
U.S. Cl. 343—225 **3 Claims**



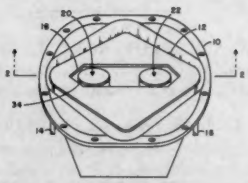
A remote control system for models and the like including a transmitter having a magnetic induction loop in which electromagnetic waves are generated and transmitted including desired intelligence. The magnetic induction loop preferably encompasses an area in which remote control is desired whereby on operation of the transmitter an electromagnetic flux of controlled intensity is provided within the area. The remote control system further includes a receiver for receiving the electromagnetic waves from the transmitter magnetically inductively coupled to the transmitter and means for controlling a model in accordance with the output of the receiver.

3,569,970
PORTABLE ANTENNA HAVING A MAST FORMED OF COAXIAL WAVEGUIDE SECTIONS
Richard C. Fenwick; Don L. Holzschuh; Betty M. Wicker, Richardson, Tex., and Paul B. Smithey, Sidney, Ill., assignors to Collins Radio Company, Dallas, Tex.
Filed Oct. 1, 1968, Ser. No. 764,149
Int. Cl. H01q *1/00, 1/22*
U.S. Cl. 343—724 **7 Claims**



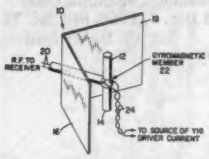
A manually transportable HF radio antenna including a segmented mast which is easily assembled and disassembled and further functions as a low-loss feedline between radio and dipole radiating elements. A pair of dipoles are provided which allow a low standing wave ratio and also function as guy wire supports for the mast. Rigid dipole elements may be provided which switchably allow either a horizontally polarized mode or a vertically polarized mode of wave propagation.

3,569,971
DUAL BAND CAVITY BACKED ANTENNA FOR RADIO NAVIGATION
Leslie V. Griffee, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed Sept. 5, 1969, Ser. No. 855,682
Int. Cl. H01q *21/00*
U.S. Cl. 343—725 **8 Claims**



A radio navigation antenna operable in either the P communication band or the L communication band. A housing mountable in a rotatable support means in the body of an aircraft accommodates a planar P band radiating element and a pair of L-band folded monopoles such that interference is minimized among the radiating elements and 180° radiation patterns may be generated by the respective radiating elements.

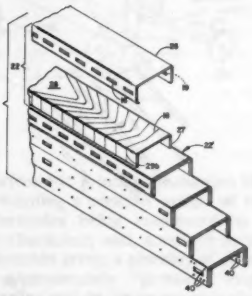
3,569,972
ELECTRONICALLY TUNABLE ANTENNA
William J. McEvoy, Ventura, Calif.
Filed July 10, 1968, Ser. No. 743,734
Int. Cl. H01q *9/16, 1/00, 9/00*
U.S. Cl. 343—747 3 Claims



A broadband microwave antenna in the form of a pair of aligned dipoles between which is interposed a ferrite element, such as a sphere of gyromagnetic material, controllably biased so as to vary its point of gyromagnetic resonance. By selectively changing the strength of the bias applied to this ferrite element, the antenna may be accurately tuned over a wide band of frequencies.

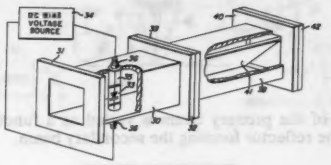
The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

3,569,973
CONSTRAINED LENS TYPE ANTENNA
Charles T. Brumbaugh, Jr, Norwalk; Jerry L. McFarland, Fullerton; Jack W. Preston, Placentia, and Richard W. Wesley, Yorba Linda, Calif., assignors to North American Rockwell Corporation
Filed May 2, 1969, Ser. No. 821,207
Int. Cl. H01g *19/06, 21/00*
U.S. Cl. 343—753 11 Claims



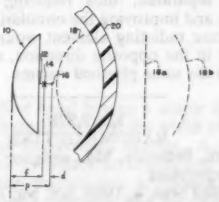
A constrained lens-type antenna including a lens having a controlled aperture phase distribution and utilizing stripline circuitry. The lens is formed of a plurality of mutually parallel stripline assemblies, each assembly comprising a pair of mutually nested dielectric U-channels sandwiching a dielectric slipsheet having a plurality of deposited electrically conductive lines of selected lengths as discrete delay elements. The outer surface of the opposing walls of the U-shaped channel assembly include microwave ports, each being electromagnetically coupled to an associated terminus of a mutually exclusive one of said delay elements, the ports in one of the opposing walls being exposed to a feed horn, serve as feed ports, while the ports in the other of the opposing walls serve as radiating ports. The novel use of stripline circuitry provides a lens assembly of minimum bulk and weight while also having improved geometrical tolerances and performance.

3,569,974
DUAL POLARIZATION MICROWAVE ENERGY PHASE SHIFTER FOR PHASED ARRAY ANTENNA SYSTEMS
Willard W. McLeod, Jr., Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 26, 1967, Ser. No. 693,531
Int. Cl. H01p *1/16;* H03h *5/12;* H01g *19/06*
U.S. Cl. 343—754 12 Claims



A phase shifter is disclosed for supporting dual orthogonal polarization modes of propagated microwave energy in tactical electrically beam scanning phased array antenna systems of the optically fed reflector type. Reentrant single port antenna array elements provide a predetermined electrical phase shift of linear as well as circular polarized energy. Incident waves received by each element oriented in one plane of polarization, for example, a vertical wave, will be electrically shifted and launched after traversal of the device as, illustratively, a horizontally oriented wave. Each element incorporates a circular polarizer as well as reflective termination member together with solid state phase shifting means.

3,569,975
PHASE PATTERN CORRECTION FOR TRANSMITTER HAVING A RADOME
George C. Fretz, Jr., Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Nov. 5, 1968, Ser. No. 773,425
Int. Cl. H01q *19/14, 3/00, 1/42*
U.S. Cl. 343—781 2 Claims



Apparatus for altering an electromagnetic wave phase configuration to a predetermined nonplanar front to compensate for radome phase distortion and which wave, upon exiting the radome, has a phase front which is planar.

3,569,976
ANTENNA ARRAY AT FOCAL PLANE OF REFLECTOR WITH COUPLING NETWORK FOR BEAM SWITCHING
William Korvin, Odenton, Md., and Milton K. Mills, Falls Church, Va.
Filed Aug. 29, 1968, Ser. No. 759,256
Int. Cl. H01q *3/26, 13/00*
U.S. Cl. 343—777 26 Claims

An antenna system for steering plural beams from a secondary reflector is formed from a primary array of linear feed elements, which can be arranged in either a one- or two-

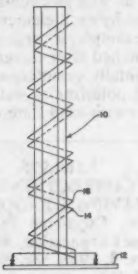
dimensional configuration. By controlling which of the radiators are simultaneously excited with a switching matrix, the

position of the primary beam is varied as a function of the axis of the reflector forming the secondary beam.

3,569,977
HEXAGRAM ANTENNA

William B. Koller, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 26, 1968, Ser. No. 786,911
Int. Cl. H01q *1/36, 1/48*
U.S. Cl. 343—848 **7 Claims**

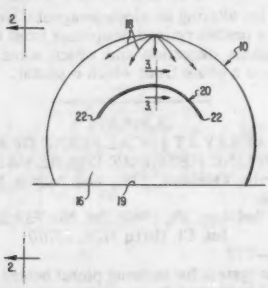


Two triangular radiating elements are interlaced in a helical winding about a common axis to form a single antenna structure. The elements are wound in opposite directions and are laterally separated, thus reducing the RF coupling between them and improving the circularity of each radiating pattern with one radiating element wound in one direction and the other in the opposite direction, a dual circularity is achieved from the same physical volume.

3,569,978
RADOME GUTTER

Lewis V. Smith, Bethesda, Md., assignor to Communications Satellite Corporation

Filed Sept. 4, 1968, Ser. No. 757,373
Int. Cl. H01q *1/42;* **E04d** *13/00*
U.S. Cl. 343—872 **9 Claims**

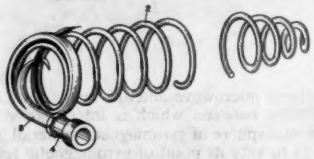


A gutter carried on the exterior surface of a radome, above the radome low look antenna aperture for diverting water flow from the surface area of the aperture.

3,569,979
HELICAL LAUNCHER

Benedikt Aa. Munk; Leon Peters, Jr., and Edward K. Damon, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Dec. 5, 1968, Ser. No. 781,319
Int. Cl. H01Q *1/36*
U.S. Cl. 343—895 **6 Claims**

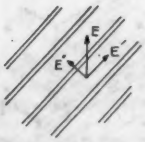


The invention is for a helical antenna assembly which utilizes a coaxial cable as a means of electrical excitation and provides a gradual transition from the coaxial cable to the helix wire to permit higher power excitation and elimination of a flat ground plane.

3,569,980
POLARIZER NETWORK

Jacques Salmon, Paris, France, assignor to Thomson C.S.F., Paris, France

Filed May 9, 1968, Ser. No. 728,279
Claims priority, application France, May 16, 1967, 106,515
Int. Cl. H01q *15/02;* **H01p** *1/16*
U.S. Cl. 343—909 **3 Claims**



The operating bandwidth of a polarizer transmitting network is increased through associating at least two pairs of elementary polarizer transmitting networks, the phase shifts between the components of the wave due to an elementary network being such that their sum is equal to the desired phase shift.

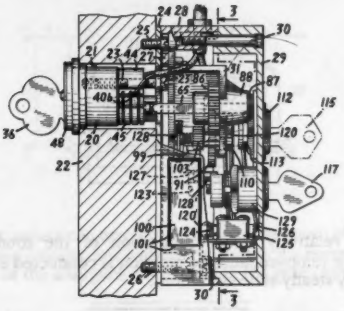
3,569,981
RECORDING LOCK SYSTEM

Lynn F. Hampton; David S. Ralph, and Henry McDonald Curl, Columbus, Ohio, assignors to The Lock-Tronic Corporation, Columbus, Ohio

Filed July 29, 1968, Ser. No. 748,415
Int. Cl. G07c *1/32*
U.S. Cl. 346—53 **2 Claims**

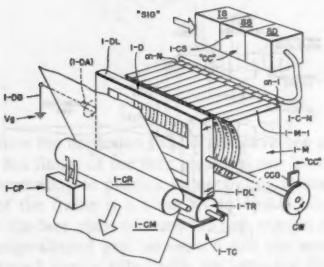
A lock and recorder cooperate to provide a record of, among other matters of interest to those responsible for protecting a given building or other space from unwanted intrusion, the times when the lock is turned and whether the lock is operated from the outside or the inside, the particular key

(of a set of keys that may be issued to several security guards) employed to turn the lock, and instances of failure of



the power supply to the recorder and tampering with the recorder.

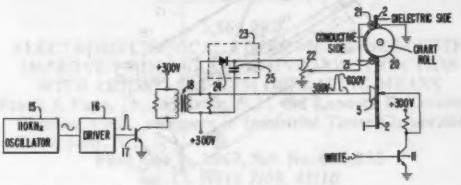
3,569,982
ELECTROSTATIC PRINTER WITH SCANNING DIELECTRIC SEGMENT
Michael S. Shebanow, and Ronald F. Borelli, Medfield, Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 2, 1968, Ser. No. 695,176
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 **20 Claims**



A high-speed electrostatic printing mechanism including a hollow-type roll presenting a concave matrix of raised font electrodes, the electrodes being configured as different alphanumeric print characters; and, arranged in image-able relation with the electrode array, a plurality of dielectric segments, each of approximately "printline height" and mounted on a propeller arm to be swept past the concave matrix for receiving character images therefrom.

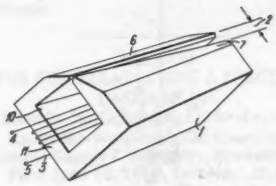
3,569,983
WRITING CIRCUIT FOR ELECTROSTATIC RECORDERS
Edward W. Marshall, Saratoga, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed May 22, 1968, Ser. No. 731,065
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 **10 Claims**

There is disclosed electrostatic recording apparatus in which the potential swing of the stylii electrode is reduced to a level that a single readily available conventional low voltage rated transistor may be used as the driver for each of the recording stylii. The reduction in stylii voltage swing is made possible by the use of a pulsed bias, called enhancement pulses, on the stylii backup electrode. The pulse width of the enhancement pulses is maintained sufficiently short, as of less than 2 microseconds, to permit the amplitude of the pulse to exceed the minimum potential required for electrostatic recording (charging of the recording medium). For a stylii potential swing of 300 volts, typical parameters for the frequency, amplitude and pulse width of the enhancement



pulses are 110 kHz., 600 volts and 1 microsecond, respectively. In addition to the reduction in the number of transistors and power supplies required, significant improvement in the quality of the low frequency and DC signal recordings without a comparable degration of high frequency performance is also obtained.

3,569,984
MAGNETIC RECORDING HEAD WITH A VARIABLE SIZE GAP
Christopher Alan Watson, Takeley, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed July 3, 1968, Ser. No. 742,304
Claims priority, application Great Britain, July 14, 1967, 32459/67
Int. Cl. G01d *15/12*; **G11b** *5/22*
U.S. Cl. 346—74 **8 Claims**

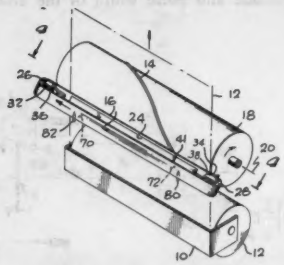


A magnetic recording head having a single tapered magnetic recording gap extending across the width of a recording medium which moves transversely thereto. A signal to be recorded, represented by pulses of alternating polarity and sequentially decreasing magnitudes, is applied to a signal winding which develops a magnetic flux for magnetizing the recording medium to positive and negative saturated states, depending upon the polarity of the pulses. Due to the decreasing magnitude of the pulses and to the tapered magnetic recording gap, varying widths of the recording medium are driven to the aforesaid saturated states, causing successive portions in time of the signal to be recorded transversely in spatial sequence across the width of said medium.

3,569,985
FACSIMILE PRINTING BLADE ASSEMBLY
Kunio A. Sumida, Los Angeles, Calif., assignor to Telautograph Corporation, Los Angeles, Calif.
Filed Aug. 16, 1968, Ser. No. 753,254
Int. Cl. G01d *15/24*
U.S. Cl. 346—139 **8 Claims**

An improved printing blade apparatus for a facsimile printer which uses a rotating band type blade. The apparatus comprises a pair of capstan rollers for holding the blade

inclined to the paper path, and a pair of skewed rollers for urging the upper blade edge toward a registration stop. A leaf



spring contacts the blade immediately below its upper edge to bias it towards the paper.

3,569,986

STYLUS FOR RECORDING APPARATUS

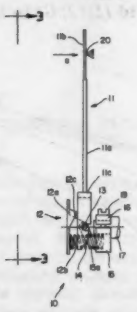
Josef Thoma, Waldkirch; Walter Laeufer, Freiburg in Breisgau, and Benno Streu, Freiburg in Breisgau, Germany, assignors to Fritz Hellige & Co., G.m.b.H., Freiburg, Breisgau, Germany

Filed Feb. 4, 1969, Ser. No. 796,400

Claims priority, application Germany, Feb. 13, 1968, 1,673,957.4

Int. Cl. G01d *15/00*

U.S. Cl. 346—139 **7 Claims**



An apparatus for recording information wherein the stylus and the connecting means for a stylus and its driving means rotate on an axis perpendicular to the axis of the driving means. The connecting means include a symmetrical lever arrangement which ensures a constant trace producing pressure upon its reversal around the axis of the driving means. Such reversing capability permits the recording of information in more than one direction around the axis of rotation of the stylus. The connecting means facilitate rapid interchange of styli.

3,569,987

METHOD OF SMELTING ORES IN A RESISTANCE FURNACE

Jutaro Yonemochi, Koadachi 171, Komaemachi, Kitatamagun Tokyo, Japan

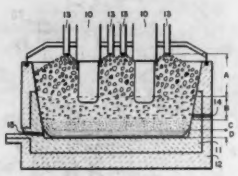
Filed Feb. 3, 1969, Ser. No. 795,816

Claims priority, application Japan, Feb. 3, 1968, 43/6564

Int. Cl. H05b *3/60*

U.S. Cl. 13—34 **3 Claims**

A method is provided for the operation of a reduction furnace for smelting reactions whereby reactor capacity, electrode size, and power requirements remain in matched relationship among themselves and with the course of the reaction which is operated in a continuous fashion if the reaction is conducted so that at the time metal and/or slag is tapped,



only a relatively minor proportion of the total amount present is removed, and the reaction is conducted under substantially steady-state conditions.

3,569,988

A LASER COLOR DISPLAY DEVICE UTILIZING DIGITAL DEFLECTORS AND DISPERSION CORRECTION

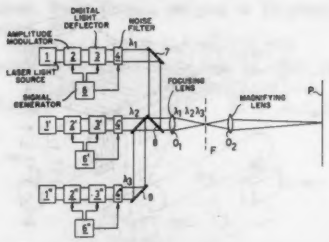
Uwe Schmidt, Hamburg-Wandsbek; Karl Joachim Schmidt-Tiedemann, Rellingen, and Simon Duinker, Hamburg, Bahrenfeld, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed May 20, 1966, Ser. No. 551,604

Claims priority, application Germany, May 22, 1965, P36864

Int. Cl. H04n *9/14*; **H04b** *9/00*

U.S. Cl. 178—5.4 **9 Claims**



A laser imaging system employing a laser beam, a series of voltage operable optical deflection cells, a polarizer for controlling the brightness of the image points, and means for correcting color dispersion including a first lens for focussing the beam in a first plane and a magnifying lens for focussing the ray in a further focal plane. Each deflection cell utilizes two independently energized Kerr cells separated by a dielectric, each of which rotates the plane of polarization of the laser beam less than 90°. Also disclosed is apparatus for eliminating flicker during a field-sequential display including an image storage tube.

3,569,989

AFTERGLOW CORRECTING CIRCUIT ARRANGEMENTS

John David Millward, Orpington, England, assignor to The Rank Organisation Limited, London

Filed Dec. 20, 1967, Ser. No. 692,037

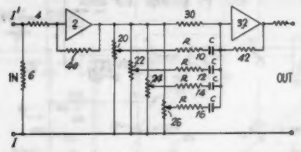
Claims priority, application Great Britain, Dec. 20, 1966, 570,27

Int. Cl. H04n *5/14*

U.S. Cl. 178–7.2 **9 Claims**

An afterglow correction circuit is provided for use in television film scanning apparatus to reduce in the video output signal from the apparatus that component resulting from the optical decay energized phosphor in the scanning tube and producing an afterglow in this tube. The correction cir-

cuit includes plural differentiating circuits connected in parallel with each other and with a signal level equalizing impedance between a low output impedance amplifier and a



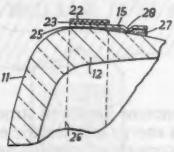
low input impedance amplifier. The time constants of the differentiating circuits, in combination, match the complex time constant of the afterglow component in the video signal.

3,569,990

IMPLOSION PROTECTION APPARATUS FOR CATHODE RAY TUBES

James Inglis, London, England, assignor to Thorn Radio Valves and Tubes Limited, London, England

Filed Feb. 28, 1968, Ser. No. 708,865
Claims priority, application Great Britain, Mar. 3, 1967, 10272/67
Int. Cl. H04n *5/64*
U.S. Cl. 178—7.8 **8 Claims**



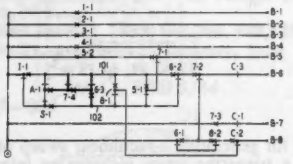
To reduce the implosion risks of the envelope of a cathode ray tube the flange of the face plate has two U-shaped metal strips cooperating to provide an encircling frame. The front margin of the frame is a close fit on and is bonded to the flange of the face plate whereas the rear margin of the frame has a wedge-shaped gap between it and the envelope. The wedge-shaped gap is filled with an adhesive filler and the frame has a surrounding tensioning band.

3,569,991

SHIFT ARRANGEMENT FOR KEYBOARD DATA SENDER

Douglas A. Kerr, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 20, 1968, Ser. No. 714,672
Int. Cl. H04l *17/06*
U.S. Cl. 178—17 **6 Claims**



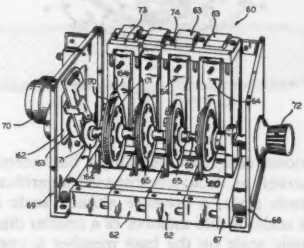
An alpha-only shift lock key in a keyboard sender permits generation of uppercase characters for alphabetic letters only. Control of conventional shifting is retained in the normal shift key whose operation dominates the function of the alpha-only key. Character generation is provided by a sender circuit which produces U.S.A. Standard Code for Information Interchange (ASCII). The sender circuit converts lowercase characters to the uppercase by inverting predetermined signal elements in accordance with the ASCII code. If the alpha-only key is operated, the inversion is provided when the sender detects certain code element signals which are common to all alphabet characters.

3,569,992

ELECTROMECHANICAL TIMER MECHANISM WITH IMPROVED MODULAR HOUSING CONSTRUCTION WITH ADJUSTABLE CAM OPERATING MEANS

Frank J. Papa, Jr., Montville, N.J., and Kenneth P. Kraemer, Cerritos, Calif., assignors to Industrial Timer Corporation, Parsippany, N.J.

Filed Mar. 6, 1969, Ser. No. 804,832
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 **16 Claims**



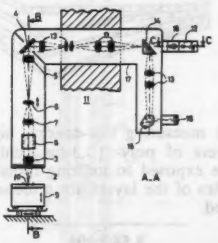
Timer having modular construction for mounting switches, relays and coils including actuating cam assemblies adjustable for timing intervals and sequencing, including molded plastic interfitting parts capable of providing a multitude of switching arrangements and which permits ease of assembly and maintenance.

3,569,993

APPARATUS FOR IRRADIATING A SPECIMEN WITH A LASER BEAM

Jean Blin; Maurits W. Geerlings, Karlsruhe, and Herman A. Tasman, Karlsruhe-Waldstadt, Germany, assignors to European Atomic Energy Community, Brussels, Belgium

Filed June 10, 1968, Ser. No. 735,636
Claims priority, application Germany, June 26, 1967, E34240I
Int. Cl. B23K *9/24*
U.S. Cl. 219—121 **3 Claims**

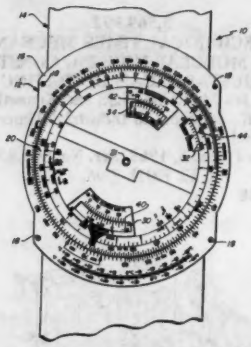


An apparatus for irradiating a specimen with a laser beam in a hot cell comprising a laser generator located outside the cell and an observation channel for remote adjustment of the specimen. The laser beam and the observation channel are in a common duct with their axes parallel to each other. A movable mirror system in the observation channel near the specimen is used to bring the two axes into coincidence when an observation is to be made.

3,569,994
NAVIGATIONAL COMPUTER

Ben W. Rau, 320 N. Deere Park West, Highland Park, Ill. 60035

Filed Dec. 26, 1968, Ser. No. 787,090
Int. Cl. G06c *27/100*
U.S. Cl. 235—78 4 Claims

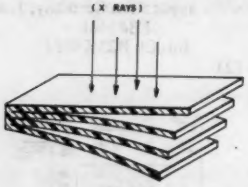


A navigational computer including a base member having arranged thereon an arcuately disposed logarithmic scale, a density altitude scale, a pressure altitude scale and an air temperature scale. A disc member of a smaller diameter than the logarithmic scale on the base member is concentrically rotatably mounted on the base member. The disc member having arranged thereon a logarithmic scale, time scales and windows disposed at predetermined positions for exposing the density altitude scale, pressure altitude scale and the air temperature scale on the base member.

3,569,995
LOW ENERGY RADIATION DOSIMETRY METHOD IN THE RANGE OF 15 KEV AND BELOW

Barbara J. Mallon, Livermore, and Lyman E. Lorensen, Orinda, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 26, 1968, Ser. No. 755,194
Int. Cl. G01t *1/04*
U.S. Cl. 250—83 4 Claims



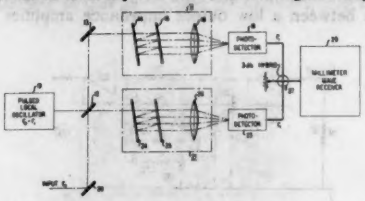
A method for measuring low-energy, high-flux radiation doses. Thin layers of poly- [3,3-bis (chloromethyl) oxacyclobutane] are exposed to ionizing radiation. Changes in physical properties of the layers are a measure of the radiation dose received.

3,569,996
OPTICAL HETERODYNE RECEIVER WITH PULSE WIDENING OR STRETCHING

James E. Goell, Middletown, and William M. Hubbard, Middletown Township, Monmouth County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 7, 1968, Ser. No. 735,216
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 10 Claims

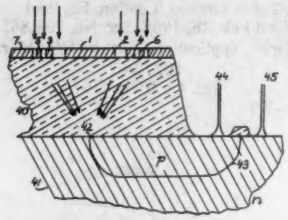
In the optical heterodyne receivers disclosed, the overall signal-to-noise ratio is improved by widening in terms of time duration the information-modulated optical pulses so that their bandwidth is comparable to the bandwidth of the detector. In particular, multiple reflection widening techniques are disclosed. Balanced detection with pulse widening in each path is also disclosed.



3,569,997
PHOTOELECTRIC MICROCIRCUIT COMPONENTS MONOLYTHICALLY INTEGRATED WITH ZONE PLATE OPTICS

Kurt Lehovec, Williamstown, Mass., assignor to Inventors and Investors, Inc., Williamstown, Mass.

Filed July 13, 1967, Ser. No. 653,245
Int. Cl. G02b *5/18*; G02f *1/28*; H01j *3/14*
U.S. Cl. 250—217 17 Claims

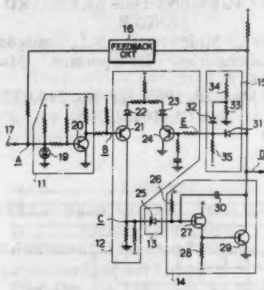


This invention concerns improved structures for the transformation of radiant energy into electric energy or vice versa. The improvement consists of combining a semiconducting microcircuit element with a zone plate optics into a compact integrated structure.

3,569,998
APPARATUS FOR GENERATING A RECTILINEAR SWEEP OF VOLTAGE

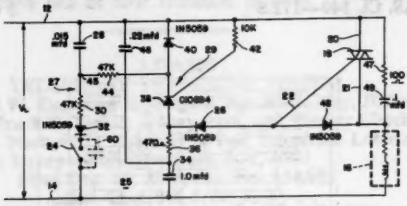
Hisashi Eguchi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1968, Ser. No. 780,624
Claims priority, application Japan, Dec. 15, 1967, 42/80090
Int. Cl. H03k *4/12*
U.S. Cl. 307—228 9 Claims



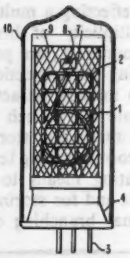
Apparatus for generating a rectilinear sweep of voltage in response to a triggering signal includes an integrator provided with a first DC coupled feedback path including an amplifier which is normally released and inhibits the integrator, a bistable circuit responsive to a triggering signal to inhibit the amplifier and release the integrator whereby a rectilinear sweep of voltage is generated by the circuit, and a second feedback path from the output of the integrator to the input of the bistable circuit to reset the bistable circuit when the output of the integrator reaches a predetermined level.

3,569,999
A.C. CONTROL CIRCUIT
Joseph E. Pascente, Norridge, Ill., assignor to Grigsby-Barton, Inc., Arlington Heights, Ill.
Filed Oct. 18, 1968, Ser. No. 768,701
Int. Cl. H03k 17/00
U.S. Cl. 307—252 16 Claims



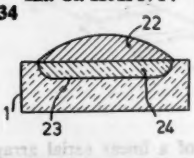
A zero-voltage A.C. switching circuit operates synchronously with the line, and may be used to control the application and removal of power to or from a highly reactive load, as well as a resistive load, without loss of synchronism or switch control.

3,570,000
GAS-FILLED COLD-CATHODE INDICATOR DISPLAY TUBE
Michio Koshizuka, Hiroshi Saito, and Shinichiro Hata, Tokyo, Japan, assignors to Japan Radio Company, Limited, Tokyo, Japan
Filed June 11, 1968, Ser. No. 736,188
Claims priority, application Japan, Nov. 10, 1967, 42/72,357
Int. Cl. H01j 7/40, 17/32, 65/48
U.S. Cl. 313—54 5 Claims



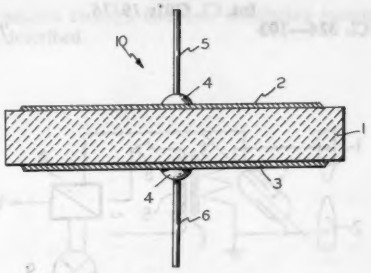
A miniature gas-filled cold-cathode indicator display tube wherein an electrically insulating oxide of a radioactive metal isotope having a long half-life (having a long period of half decay), such as thorium oxide, uranium oxide or vanadium oxide is placed within the envelope of the tube to prevent the ionization voltage from increasing when the tube is operated under adverse conditions.

3,570,001
ALLOYED SEMICONDUCTOR DEVICE WITH ALUMINUM AND MAGNESIUM ELECTRODE
Willem Frederik Chalmers Hoyinck van Papendrecht, Nijmegen, Netherlands, and Bernhard Wilde, Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 27, 1968, Ser. No. 740,510
Claims priority, application Germany, June 29, 1967, P 16 14 262.4
Int. Cl. H01l 3/14
U.S. Cl. 317—234 6 Claims



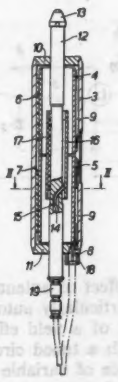
A device whose breakdown voltage is improved by adding to the alloyed electrode, which contains aluminum to flatten the alloying front, magnesium to round off the front edges, is described.

3,570,002
NON-LINEAR RESISTOR OF SINTERED ZINC OXIDE
Takeshi Masuyama and Michio Matsuoka, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 24, 1968, Ser. No. 723,746
Claims priority, application Japan, Apr. 26, 1967, 42/27,342
Int. Cl. H01l 3/16
U.S. Cl. 317—238 9 Claims



A non-linear resistor. The resistor has a sintered disc of zinc oxide and two electrodes, one applied to each of the opposite surfaces of said sintered disc. One of said two electrodes is a silver electrode in non-ohmic contact with one of said opposite surfaces, and the other of said two electrodes in ohmic contact with another of said opposite surfaces.

3,570,003
POSITION RESPONSIVE VARIABLE CAPACITOR
Gordon Maurice West, Kirkcaldy, Fife, Scotland, assignor to The Rank Organisation Limited, London, England
Filed Jan. 21, 1969, Ser. No. 792,699
Claims priority, application Great Britain, Feb. 12, 1968, 6,843/68
Int. Cl. H01g 5/14
U.S. Cl. 317—246 12 Claims



A capacitive potentiometer in which the electric field is set up by at least two electrical discrete elements

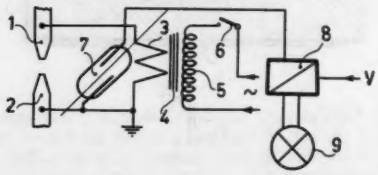
disposed in a line and the electrode and elements are movable relatively along such line and wherein the operative electric field passes through only one dielectric to avoid unsymmetrical distortion of the field due to environmental changes.

3,570,004

APPARATUS USING MAGNETIC REED SWITCHES FOR MONITORING THE OPERATION OF A SPOT-WELDING MACHINE

Hendrik J. de Jong, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 685,025, Nov. 22, 1967. This application Jan. 30, 1968, Ser. No. 701,754
Claims priority, application Netherlands, Nov. 24, 1966, 6616539
Int. Cl. G01r *19/16*
U.S. Cl. 324—103 **7 Claims**



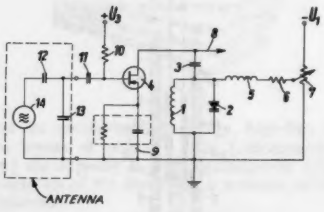
Apparatus for monitoring the current in a spot welding machine includes a magnetic reed switch responsive to the magnetic field produced by the welding current. The reed switch operates a trigger circuit which, in turn, operates a signal lamp.

3,570,005

RADIO RECEIVER INPUT CIRCUIT FOR REDUCED LOADING BY CAPACITIVE ANTENNAS

Hans Prolss, Hildensheim, Niedersachsen, Germany, assignor to Blaupunkt-Werke G.m.b.H., Hildesheim, Germany

Filed Feb. 26, 1968, Ser. No. 708,143
Claims priority, application Germany, Apr. 14, 1967, B 92,064
Int. Cl. H04b *1/18, 1/28*
U.S. Cl. 325—376 **5 Claims**



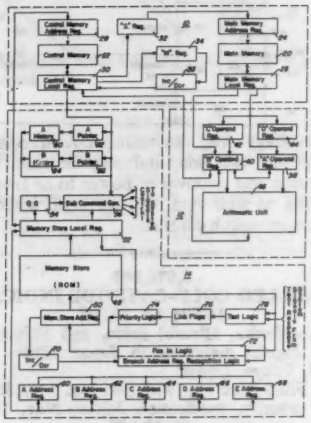
To overcome the effect of antenna capacity on tuning of radio receivers, particularly automobile receivers, the emitter-collector path of a field effect transistor is connected in parallel with a tuned circuit including a fixed inductance and a diode of variable capacitance, the bias of the diode determining the resonant frequency of the tuned circuit; the antenna is connected to the base of the field effect transistor, which is further supplied with a variable bias.

3,570,006

MULTIPLE BRANCH TECHNIQUE

George S. Hoff, Sudbury, and Ming-tzer Miu, Brighton, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 2, 1968, Ser. No. 694,949
Int. Cl. G06f *9/10*
U.S. Cl. 340—172.5 **8 Claims**



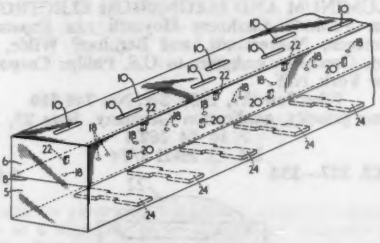
An apparatus for effecting a multiple branching operation wherein a multiplicity of branch addresses, with corresponding test conditions, are pre-established and the results stored pending the detection of a "branch-on-stored-test" signal to initiate the actual branching operation. To accommodate the branch on stored test operation, provisions are made for storing a multiplicity of branch addresses in corresponding branch address registers together with indicating means to establish the results of the test conditions and for storing an indication thereof prior to the actual branching operation.

3,570,007

PLURAL BEAM COUPLED WAVEGUIDE ANTENNA

Eric A. N. Whitehead, London, England, assignor to Elliott Brothers (London) Limited, London, England

Filed Apr. 11, 1968, Ser. No. 720,649
Claims priority, application Great Britain, Apr. 17, 1967, 7,821/67
Int. Cl. H01q *13/10*
U.S. Cl. 343—771 **4 Claims**



The elements of a linear aerial array are fed by one of a pair of transmission lines coupled together by directional couplers. By feeding a respective transmission

line different radiation patterns are produced. A planar array, formed by mounting the linear arrays adjacently, can be fed by two pairs of feeder transmission lines each pair coupled together by directional couplers and one feeder line of each pair feeding a respective array line. Supplying any one of the four feeder lines produces a respective one of four radiation patterns.

3,570,008

TELEPHONE SWITCHING SYSTEM

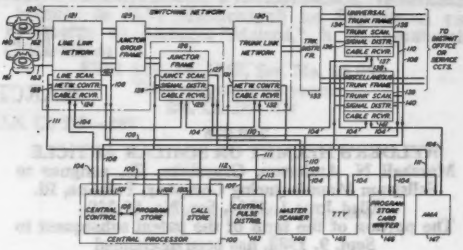
Randall W. Downing, Eatontown, Harold F. May, Holmdel, Frank F. Taylor, Asbury Park, and Werner Ulrich, Colts Neck, N.J., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Filed Dec. 31, 1963, Ser. No. 334,875

Int. Cl. G06f *3/00, 9/00*

U.S. Cl. 340—172.5 **45 Claims**

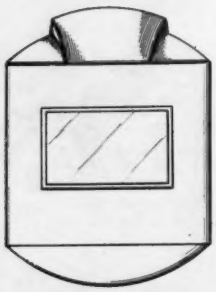
A program controlled telephone switching system which comprises duplicated control and memory units and duplicated peripheral equipments. The control of the peripheral equipments through common translating instrumentalities is described.



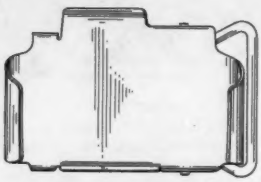
DESIGNS

MARCH 9, 1971

220,076
WELDER'S HELMET OR SIMILAR ARTICLE
Marshall N. Anderson, Grayslake, Ill., assignor to Sellstrom Manufacturing Company, Palatine, Ill.
Filed June 1, 1964, Ser. No. 80,230
The portion of the term of the patent subsequent to Sept. 9, 1982, has been disclaimed
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



220,077
COMBINED BELT BUCKLE AND HOLDER FOR A LIGHTER OR SIMILAR ARTICLE
Wilfred W. Weingardt, 5247 Southeastern Ave., Indianapolis, Ind. 46201
Filed Apr. 1, 1969, Ser. No. 16,529
Term of patent 14 years
Int. Cl. D2—*08*
U.S. Cl. D2—406



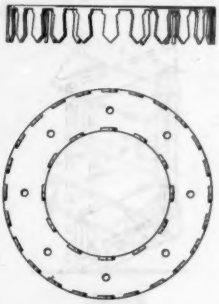
220,078
PILLOW ATTACHABLE TO A SEAT BACK
Thad J. Earl, 1132 E. 2nd St., Defiance, Ohio 43512
Filed May 29, 1969, Ser. No. 17,413
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D3—9

220,079
FILE HOLDER
Isak Benis, 2165 Matthews Ave., Bronx, N.Y. 10462
Filed Apr. 24, 1969, Ser. No. 16,887
Term of patent 3½ years
Int. Cl. D8—*02*
U.S. Cl. D8—94

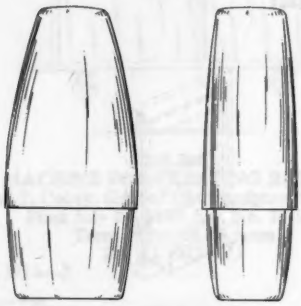
220,080
BAIL
William Doyle Watt, Jr., Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed Dec. 5, 1969, Ser. No. 20,386
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—138

220,081
SHOWER CURTAIN HOOK
Victor Trivilino, Elmhurst, N.Y., assignor to Kleinert's Inc., College Point, N.Y.
Filed Nov. 17, 1969, Ser. No. 20,128
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—239

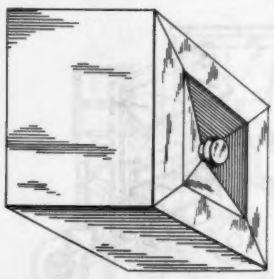
220,082
TRUSS CONNECTOR PLATE
Donald L. Thomas, 615 Melinda Drive, Oxford, Ohio 45056
Filed Oct. 2, 1969, Ser. No. 19,378
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—266



220,083
COMBINED BOTTLE AND COVER THEREFOR
James Tucker, Chicago, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Sept. 24, 1969, Ser. No. 19,280
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—144



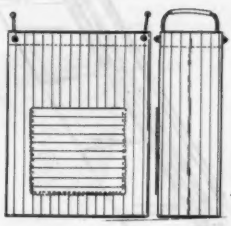
220,084
CONTAINER FOR LIQUIDS
Eugene E. Goodrich, 819 S. Western Ave., Park Ridge, Ill. 60068
Filed Aug. 29, 1969, Ser. No. 18,907
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—175



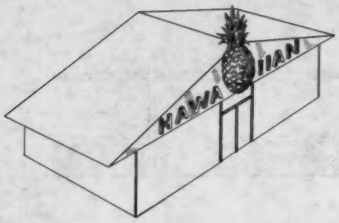
220,085
PACKAGING AND STACKING TRAY
Albertus Antonius Swane, 's Hertogenbosch, Netherlands, assignor to N.V. Maatschappij tot Exploiteren van Octrooien en Licenties "Matepa," 's Hertogenbosch, Netherlands
Filed Aug. 26, 1969, Ser. No. 18,854
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—187

220,086
CHEESE CONTAINER
Pierre Benech, Paris, France, assignor to Societe Anonyme des Fermiers Reunis, Paris, France
Filed Aug. 12, 1969, Ser. No. 18,653
Claims priority, application France Feb. 12, 1969
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—192

220,087
SHOPPING BAG
Lee Shy-Bell Schauble, Box L and S, Manteno, Ill. 60950
Filed May 26, 1969, Ser. No. 17,365
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—249

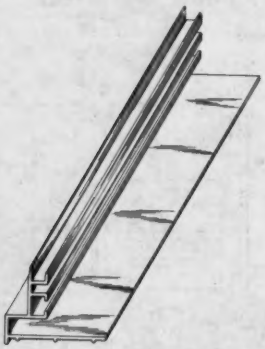


220,088
RESTAURANT BUILDING
William C. Sizer, Box 832, Minneapolis, Minn. 55440
Filed Sept. 9, 1968, Ser. No. 13,457
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

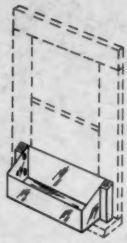


220,089
MOVABLE BUILDING COMPRISING A SHOWROOM
Robert W. Orlick, 5290 Villa-Way, Edina, Minn. 55436
Filed Oct. 27, 1969, Ser. No. 19,726
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

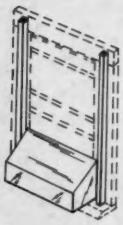
220,090
EXTRUDED BEAM FOR SWIMMING POOLS
William A. van den Broek, Doylestown, Pa., assignor to Sylvan Pools, Inc., Doylestown, Pa.
Filed Oct. 28, 1969, Ser. No. 19,762
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



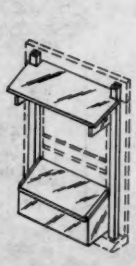
220,091
WINDOW CASE STRUCTURE
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 13,387, Sept. 4, 1968, now Patent No. 216,103, dated Nov. 25, 1969. This application Nov. 3, 1969, Ser. No. 19,899
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



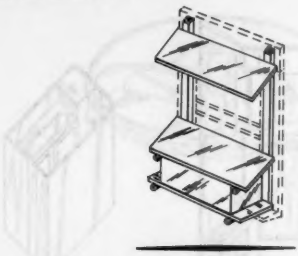
220,092
COMBINATION WINDOW AWNING AND CASE STRUCTURE
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 13,387, Sept. 4, 1968, now Patent No. 216,103, dated Nov. 25, 1969. This application Nov. 3, 1969, Ser. No. 19,900
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



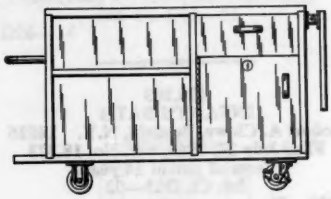
220,093
COMBINATION WINDOW AWNING AND CASE STRUCTURE
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 13,387, Sept. 4, 1968, now Patent No. 216,103, dated Nov. 25, 1969. This application Nov. 3, 1969, Ser. No. 19,902
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



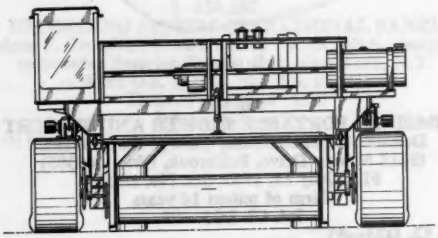
220,094
COMBINATION WINDOW AWNING AND CASE STRUCTURE
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 13,387, Sept. 4, 1968, now Patent No. 216,103, dated Nov. 25, 1969. This application Nov. 3, 1969, Ser. No. 19,903
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

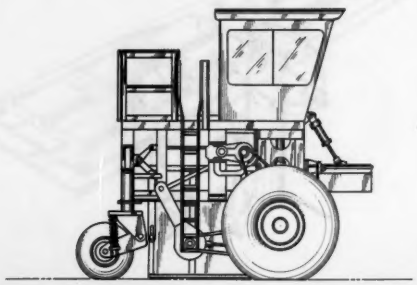


220,095
UTILITY CART
John P. Salsgiver, West Acton, Mass., assignor to United Technical Corporation, West Concord, Mass.
Filed June 6, 1969, Ser. No. 17,558
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3

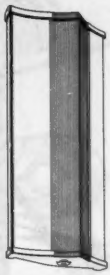


220,096
MACHINE FOR TREATING REFUSE
Herbert T. Cobey, Galion, Ohio, assignor to Imco, Inc.
Filed July 24, 1969, Ser. No. 18,382
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3

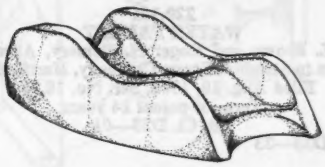




220,097
TRUCK MIRROR
Hugo Magi, Etobicoke, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada
Filed Sept. 24, 1969, Ser. No. 19,287
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—6

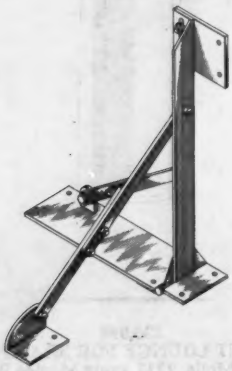


220,098
BODY REST LOUNGE FOR SHAMPOOING
Beulah Molle, 2211 Santa Monica Blvd., Santa Monica, Calif. 90404
Filed Dec. 5, 1969, Ser. No. 20,376
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—3

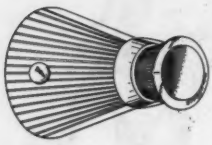


220,099
FISHING LURE
Lowell W. Brawley, 1540 Carlton Ave. 95350, and Gerald D. Peck, 1509 Grimes Ave. 95351, both of Modesto, Calif.
Filed Aug. 13, 1969, Ser. No. 18,661
Term of patent 14 years
Int. Cl. D22—*07*
U.S. Cl. D22—27

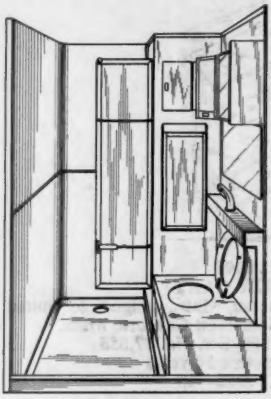
220,100
VEHICLE FLOOR MOUNTED GUN RACK
Walter P. Akin, 5805 Copeland Road, Paradise, Calif. 95969
Filed Aug. 11, 1969, Ser. No. 18,620
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99

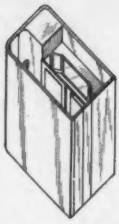


220,101
WATER FAUCET
George Z. Brown and Roger H. Ramsey, Akron, Ohio, assignors to Standard Screw Company, Hartford, Conn.
Filed Aug. 18, 1969, Ser. No. 18,751
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23

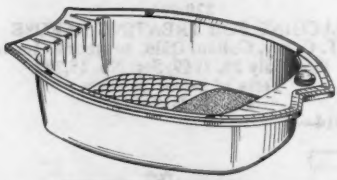


220,102
DESIGN FOR A BATHROOM MODULE
Ray C. Conner, Battle Creek, Mich., assignor to The Cortez Corporation, Kent, Ohio
Filed June 19, 1969, Ser. No. 17,780
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49





220,103
INFANT'S BATH
Robert A. Clowe, Penfield, N.Y. 14526
Filed July 24, 1969, Ser. No. 18,373
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52

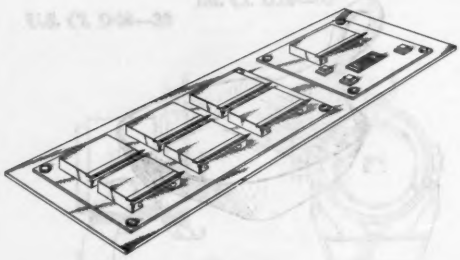


220,104
COMBINED PORTABLE SHOWER AND SUPPORT
Donald R. Quackenbush, College Place, Wash. (2112 Marcia Drive, Bellbrook, Ohio 45305)
Filed July 11, 1969, Ser. No. 18,181
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57

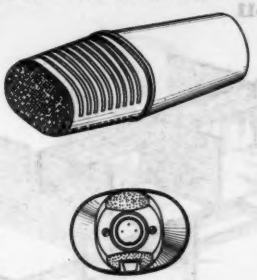
220,105
DATA PROCESSING TERMINAL CONSOLE
Neal Small, New York, N.Y., assignor to Interplex Corporation, Waltham, Mass.
Filed Aug. 11, 1969, Ser. No. 18,642
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

220,106
PINCH ROLLER HUB FOR A TAPE RECORDER OR THE LIKE
John H. Rentschler, Minneapolis, Minn., assignor to Minnesota Rubber Company, Minneapolis, Minn.
Term of patent 14 years
Filed May 29, 1969, Ser. No. 17,416
Int. Cl. D14—*01*
U.S. Cl. D26—14

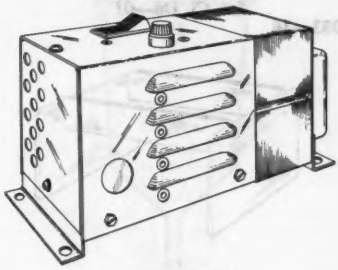
220,107
RECORDING SYSTEM OPERATIONAL PANEL
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 19,368
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



220,108
MICROPHONE
Rebertus van de Poel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation
Filed Oct. 6, 1969, Ser. No. 19,441
Claims priority, application Switzerland Apr. 9, 1969
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

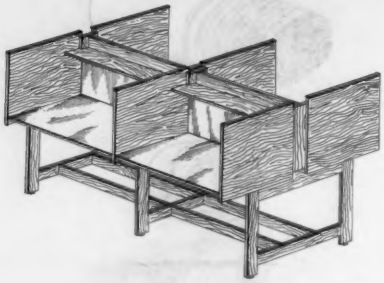


220,109
POWER CONVERTER
Donald J. Gnaedinger and Melvin F. Walter, Highland, Ill., assignors to Basler Electric Company, Highland, Ill.
Filed Aug. 29, 1969, Ser. No. 18,913
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15

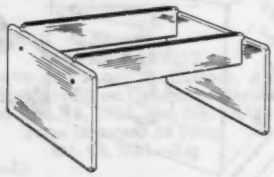


220,110
CLOTHING RACK
Miguel Jakiemow, 27 Rich St., Irvington, N.J. 07111
Filed Sept. 5, 1969, Ser. No. 19,029
Term of patent 14 years
U.S. Cl. D33—8

220,111
DOUBLE STUDY CARRELL UNIT
John L. Gianfagna, 102 Crestwood Circle, Marietta, Ohio 45750
Original design application June 4, 1968, Ser. No. 12,554. Divided and this application May 14, 1969, Ser. No. 18,669
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—11

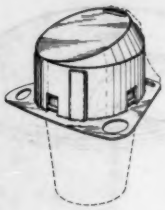


220,112
TABLE BASE
Keith N. Muller, 73 Balmoral Ave., Toronto 7, Ontario, Canada, and Michael M. Stewart, 1 Laurier Ave., Toronto 5, Ontario, Canada
Filed Feb. 24, 1969, Ser. No. 15,887
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—14

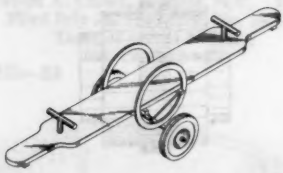


220,113
RECORDING SYSTEM CONSOLE
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Scanfax Systems Corporation, New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 19,366
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—19

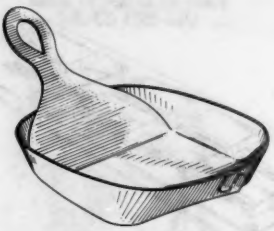
220,114
COMBINATION CUP DISPENSER AND TOOTHBRUSH HOLDER
Michael W. Carroll, 250 Lincoln, Roselle, Ill. 60172
Filed Aug. 14, 1969, Ser. No. 18,679
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—26



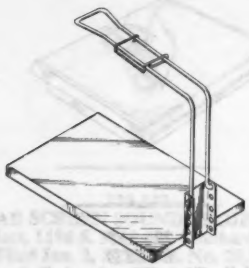
220,115
WHEELED TEETER TOTTER
Victor J. Semler, 1515 Sylvester St., Pasco, Wash. 99301
Filed Feb. 2, 1970, Ser. No. 21,205
Term of patent 14 years
Int. Cl. D21—*00*
U.S. Cl. D34—5



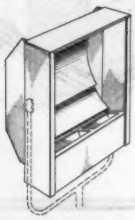
220,116
SERVING SKILLET
James L. Siegmann, 108 E. Jefferson St., Goshen, Ind. 46526
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10



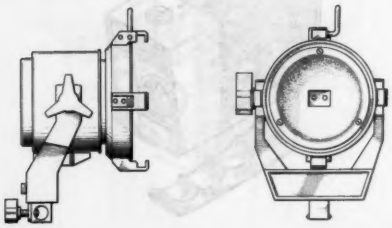
220,117
SUPPORT FOR ELECTRIC HAND MIXER OR THE LIKE
William F. Liatti, 1807 Fernridge, San Dimas, Calif. 91773
Filed Mar. 24, 1969, Ser. No. 16,394
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



220,118
FOLDABLE LUMINAIRE HOUSING
Joseph N. Tawil, Woodland Hills, George R. Hartz, Canoga Park, and Edmund F. Walsh, Reseda, Calif., assignors to Berkey/Color Tran Mfg., Inc., Burbank, Calif.
Filed Sept. 26, 1969, Ser. No. 19,308
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20



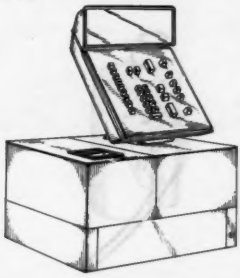
220,119
LUMINAIRE HOUSING
Richard B. Glickman, Sherman Oaks, and George R. Hartz, Canoga Park, Calif., assignors to Berkey/Color Tran Mfg., Inc., Burburk, Calif.
Filed Sept. 26, 1969, Ser. No. 19,317
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20



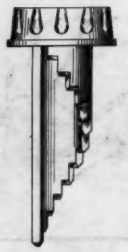
220,120
NAVIGATIONAL LIGHT
Donald E. Stewart, Grand Rapids, Mich., assignor to Attwood Corporation, Lowell, Mich.
Filed Sept. 18, 1969, Ser. No. 19,203
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D48—32

220,121
COMBINED GARBAGE CAN AND SUPPORT THEREFOR
Arthur U. Griggers, 351 Hickory St., Greenville, Ala. 36037
Filed Dec. 4, 1969, Ser. No. 20,358
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—35

220,122
CASH REGISTER
Allan Borows, Scarsdale, N.Y., assignor to Pitney Bowes-Alpex, Inc.
Filed Nov. 7, 1969, Ser. No. 19,817
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—4



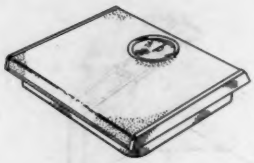
220,123
REFLECTIVE FUEL GAUGE
Alfred H. Kelch, Jr., Mequon, Wis., assignor to The Kelch Corporation, Mequon, Wis.
Filed Sept. 24, 1969, Ser. No. 19,285
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



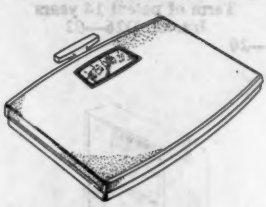
220,124
LEVELER FOR A PICKUP TRUCK OR THE LIKE
David D. Powell, 9009 Kiefer Blvd., Sacramento, Calif. 95826
Filed Jan. 26, 1970, Ser. No. 21,070
Term of patent 14 years
Int. Cl. D10—*99*; D12—*99*
U.S. Cl. D52—6

220,125
ANTIFREEZE TESTER
Alan G. Wallskog, Prospect Heights, Ill., assignor to E. Edelmann & Co.
Filed Feb. 24, 1970, Ser. No. 21,592
Term of patent 14 years
Int. Cl. D10—*11*
U.S. Cl. D52—7

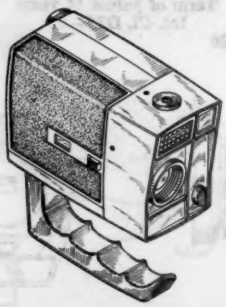
220,126
SCALE
Robert A. O'Neil, Glen Ellyn, and Stefan A. Unger, Chicago, Ill., assignors to Borg-Erickson Corporation Chicago, Ill.
Filed May 7, 1969, Ser. No. 17,044
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—10



220,127
SCALE
Robert A. O'Neil, Glen Ellyn, and Stefan A. Unger, Chicago, Ill., assignors to Borg-Erickson Corporation, Chicago, Ill.
Filed May 7, 1969, Ser. No. 17,054
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—10

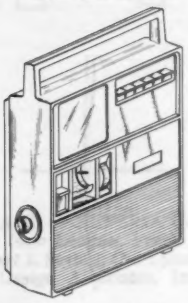


220,128
MOTION PICTURE CAMERA
Robert E. Bourke, Goodhill Road, Weston, Conn. 06880
Filed May 22, 1969, Ser. No. 17,276
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



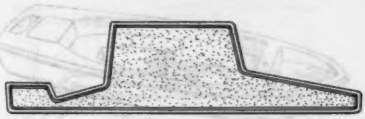
220,129
OPTICAL IMAGE SPLITTER
Bernard J. Lipari and Robert R. Hickerson, Overland Park, Kans., assignors to Beston Electronics, Inc., Prairie Village, Kans.
Filed July 9, 1969, Ser. No. 18,123
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D61—1

220,130
REAR SCREEN SOUND PROJECTOR
Richard Hart, 1196 S. Main St., Lombard, Ill. 60148
Filed Jan. 2, 1970, Ser. No. 20,751
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1

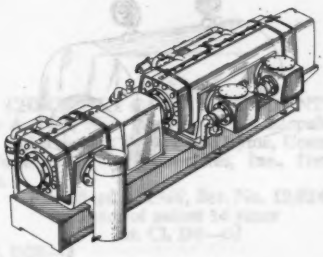


220,131
REAR SCREEN PROJECTOR
Richard Hart, 1196 S. Main St., Lombard, Ill. 60148
Filed Jan. 2, 1970, Ser. No. 20,752
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1

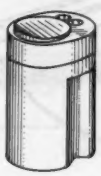
220,132
HOUSING FOR TYPEWRITER
Alfons Boothby and Georges Joseph, Wilhelmshaven, Germany, assignors to Olympia Werke AG., Wilhelmshaven, Germany
Filed Sept. 17, 1969, Ser. No. 19,183
Claims priority, application Germany Apr. 18, 1969
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



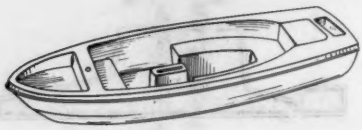
220,133
COMPRESSOR
James Gordon Knapp, Chicago, and Robert L. Baumgartner, Elgin, Ill., and Joseph E. Muller, Catasauqua, Pa., assignors to Fuller Company
Filed Nov. 14, 1968, Ser. No. 14,543
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



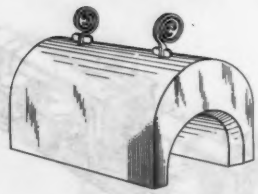
220,134
PUMP FOR INFLATABLE ARTICLES
Petrus Joannes Stut, Drachten, Netherlands, assignors to U.S. Philips Corporation
Filed Nov. 3, 1969, Ser. No. 19,911
Claims priority, application Switzerland May 29, 1969
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



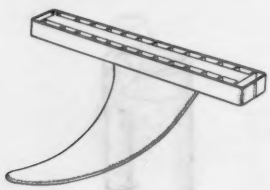
220,135
BOAT HULL
Peter A. Milne, South Benfleet, Essex, England, assignor to Richmond Marine Limited, London, England
Filed June 26, 1969, Ser. No. 17,903
Claims priority, application Great Britain Dec. 30, 1968
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



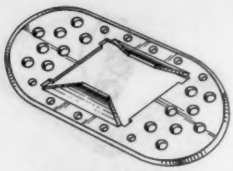
220,136
PIPELINE FLOAT
William W. Wilson, Shreveport, La., assignor to Morton S. Adler, Des Moines, Iowa, a fractional part interest
Filed Sept. 17, 1969, Ser. No. 19,185
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1



220,137
SURF BOARD FIN AND SUPPORT BOX COMBINATION
Sigmund Kwiatkowski, Seaton, South Australia, Australia, assignor to John Arnold's Surf Shop Pty. Ltd., Adelaide, South Australia, Australia
Filed Oct. 29, 1969, Ser. No. 19,827
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D71—1

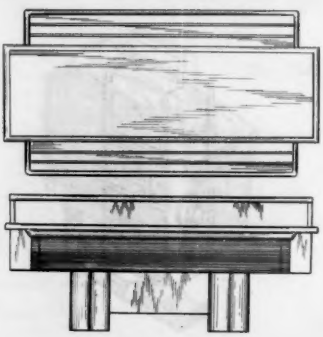


220,138
HOUSING FOR A ROADWAY MARKER
Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Filed Jan. 12, 1970, Ser. No. 20,895
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1

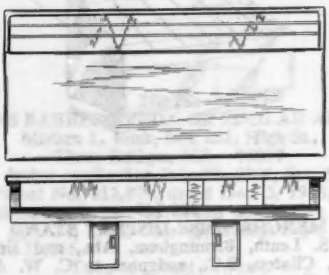


220,139
WRITING INSTRUMENT
Gino C. Di Spirito, Hasbrouck Heights, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Apr. 9, 1970, Ser. No. 22,355
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17

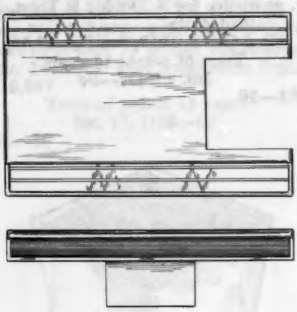
220,140
CONDIMENT CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 18,998
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



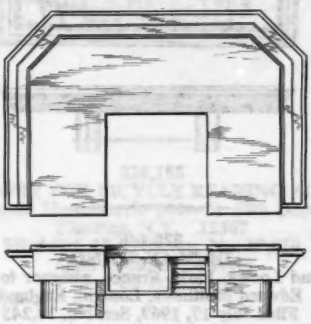
220,141
FOOD CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 19,005
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



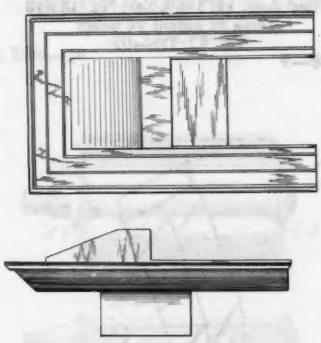
220,142
BEVERAGE CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 19,012
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



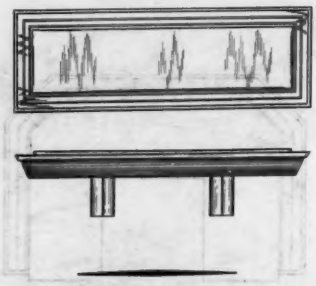
220,143
FOOD CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 19,016
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



220,144
CHECK-OUT CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 19,024
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



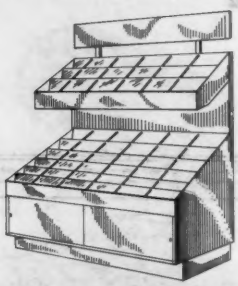
220,145
ISLAND CAFETERIA COUNTER
Murray A. Perl, New London, Frank Laspaluto, Waterford, and Robert J. Sevieri, Old Lyme, Conn., assignors to Facilities Design Associates, Inc., New London, Conn.
Filed Sept. 4, 1969, Ser. No. 19,025
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—2



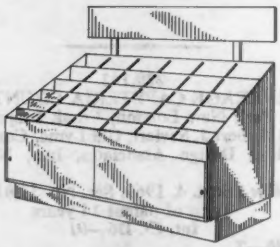
220,146
DISPLAY STAND
Raymond Loewy, Paris, France, assignor to Stanley Edward Matthews, London, England
Filed July 17, 1969, Ser. No. 18,243
Claims priority, application Great Britain Jan. 24, 1969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—9

220,147
DISPLAY STAND
John Richard Atkinson, Wigginton, York, England, assignor to Rowntree Mackintosh Limited, York, England
Filed Aug. 11, 1969, Ser. No. 18,610
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—9

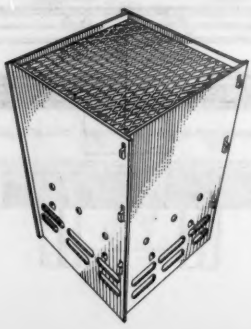
220,148
MERCHANDISE DISPLAY STAND
William S. Leath, Birmingham, Ala., and Jimmie D. Waller, Clinton, S.C., assignors to C. W. Anderson Hosiery Corporation, Clinton, S.C.
Filed Aug. 22, 1969, Ser. No. 18,812
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D80—9



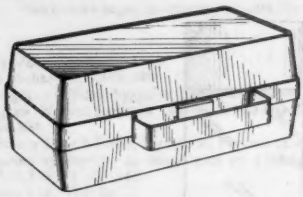
220,149
MERCHANDISE DISPLAY STAND
William S. Leath, Birmingham, Ala., and Jimmie D. Waller, Clinton, S.C., assignors to C. W. Anderson Hosiery Corporation, Clinton, S.C.
Filed Aug. 22, 1969, Ser. No.18,993
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D80—9



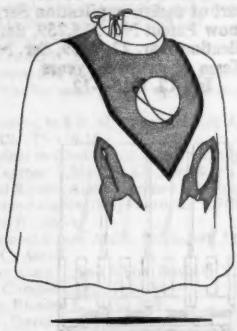
220,150
PORTABLE BARBECUE STOVE
Joe E. Roestenburg, Trinidad, Colo., assignor to William J. Tracy, as trustee for S. Double R Trust, 1st National Bank of Trinidad, Colo.
Filed Oct. 6, 1969, Ser. No. 19,438
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D81—10



220,151
CASE FOR A HAIR CURLER KIT OR SIMILAR ARTICLE
Robert S. Waters, Oak Brook, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 27, 1969, Ser. No. 15,520
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

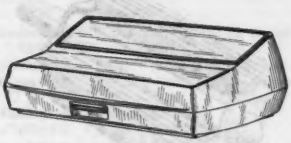


220,152
CHILD'S BARBER APRON OR SIMILAR ARTICLE
Miriam L. Bush, Box 231, High St., Three Bridges, N.J. 08887
Original design application July 27, 1966, Ser. No. 3,224, now Patent No. 212,870, dated Dec. 3, 1968, which is a continuation-in-part of design application Ser. No. 1,891, Apr. 14, 1966. This application Sept. 16, 1968, Ser. No. 19,066
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

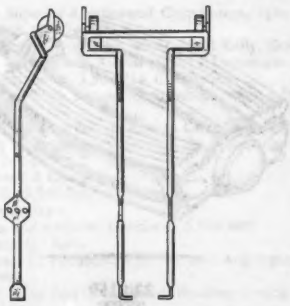


220,153
CHILD'S BARBER APRON OR SIMILAR ARTICLE
Miriam L. Bush, Box 231, High St., Three Bridges, N.J. 08887
Original design application July 27, 1966, Ser. No. 3,224, now Patent No. 212,870, dated Dec. 3, 1968, which is a continuation-in-part of design application Ser. No. 1,891, Apr. 14, 1966. This application Sept. 16, 1968, Ser. No. 10,067
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

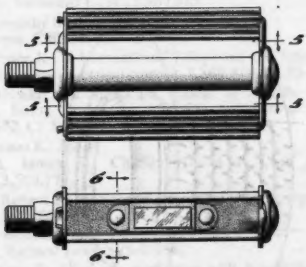
220,154
STORAGE CASE FOR A MANICURIST TOOL OR SIMILAR ARTICLE
Edward A. Irelan, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 23, 1970, Ser. No. 21,046
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



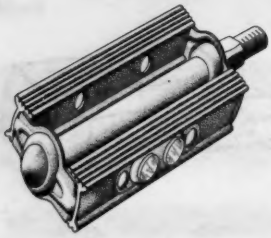
220,155
ACCESSORY FOR BICYCLE REARING ACTIONS
Harold Hasselbusch, 144—21 68th Drive, Flushing, N.Y. 11367
Filed Oct. 17, 1969, Ser. No. 19,610
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—1



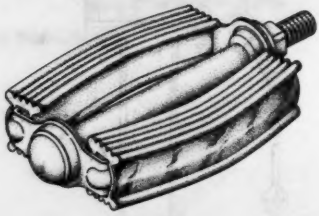
220,156
REFLECTIVE BICYCLE PEDAL
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Feb. 24, 1970, Ser. No. 21,579
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—14



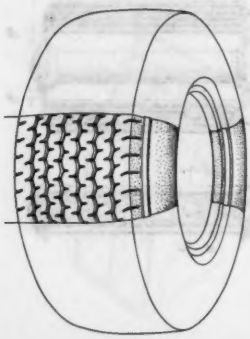
220,157
REFLECTIVE BICYCLE PEDAL
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Feb. 24, 1970, Ser. No. 21,580
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—14



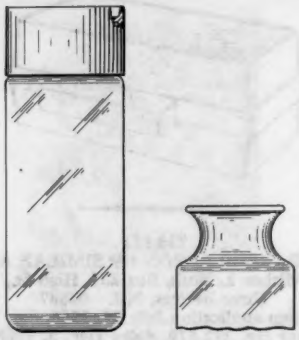
220,158
REFLECTIVE BICYCLE PEDAL
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysvillle, Ky.
Filed Mar. 2, 1970, Ser. No. 21,703
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—14



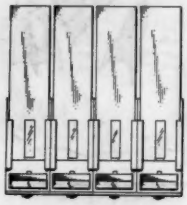
220,159
TIRE
Iain C. Mills, Birmingham, England, assignor to The Dunlop Company Limited, Birmingham, England
Continuation-in-part of design applications Ser. No. 13,087, Aug. 12, 1968, and Ser. No. 14,574, Nov. 20, 1968. This application July 11, 1969, Ser. No. 18,178
Claims priority, application Great Britain Mar. 14, 1968; May 30, 1968; Mar. 19, 1969
Term of patent 7 years
Int. Cl. D12—*14*
U.S. Cl. D90—20



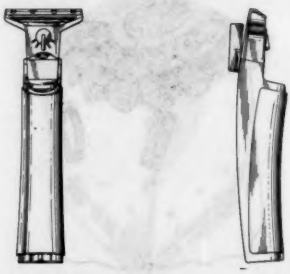
220,160
COMBINED SHAKER AND SERVER
Sara L. Balbach, Corning, Richard W. Greger, Elmira, and Allen J. Samuels, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jan. 10, 1969, Ser. No. 15,302
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D94—3



220,161
PANEL OF PRODUCT CARTRIDGES
Martelle J. Syverson, 1100 S. Broadway, P.O. Box 408, Albert Lea, Minn. 56087
Continuation-in-part of design application Ser. No. 7,735, July 10, 1967, now Patent No. 215,259, dated Sept. 16, 1969. This application Apr. 22, 1969, Ser. No. 17,858
Term of patent 14 years
Int. Cl. D15—*12*
U.S. Cl. D94—3



220,162
RAZOR
Bruce F. Ray, Danvers, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of design application Ser. No. 18,651, Aug. 12, 1969. This application Feb. 10, 1970, Ser. No. 21,389
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AA Wire Products Company: *See—*
Gulow, Robert A., 3,568,389.

AB Landsbygdens Frilidsbebyggelse: *See—*
Appelgren, Wolter; Jorsback, Jan-Olov; and Naeslund, Gudmund, 3,568,838.

Abbott, Thomas I.; and Smith, Donald A. Process of and composition for rendering hydrophilic an image area on a lithographic printing plate. 3,568,598, Cl. 101-465.

Acton Rubber Ltd., The: *See—*
Gardner, Denys, 3,568,340.

Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Plural channel tone coloring system with common mixer for electronic musical instrument. 3,569,605, Cl. 84-1.22

Adams, Charles B.: *See—*
Hale, John K.; and Adams, Charles B.,3,568,423.

Adams, Francis Allen. Tool for severing the spirally wound armor of an electrical cable. 3,568,314, Cl. 30-90.2

Adams, Larry L., to Wallace-Murray Corporation. Engine cooling control device. 3,568,647, Cl. 123-41.12

Adams, Robert H.: *See—*
to Lockheed Aircraft Corporation. Amplifier system for driving shaker motors. 3,569,847, Cl. 330-13.

Aerojet-General Corporation: *See—*
Penberg, Mortimer, 3,568,831.

Aeronautics and Space Administration with respect to an invention of: *See—*
Esten, Harold; and Aeronautics and Space Administration with respect to an invention of;,3,569,637.

Aeroquip Corporation: *See—*
Geisman, James L., 3,568,494.

Aggarwal, Rattan; and Segall, Louis H., to Bendix Corporation, The. Control means for pulse generating apparatus. 3,569,727, Cl. 307-106.

Ahlen, Karl Gustav, to S.R. M. Hydromekanik AB. Valve mechanisms. 3,568,652, Cl. 123-139.18

Ahlmeyer, Heinz, to Continental Can Company, Inc. Plastic covered molded egg carton. 3,568,914, Cl. 229-44.

Aidlin, Samuel S.; and Aidlin, Stephen H. Hopper-type apparatus for feeding oriented shallow flanged articles. 3,568,882, Cl. 221-164.

Aidlin, Stephen H.: *See—*
Aidlin, Samuel S.; and Aidlin, Stephen H.,3,568,882.

Ailion, David C.: *See—*
Samuelson, Gary L.; and Ailion, David C.,3,569,734.

Air Preheater Company, Inc., The: *See—*
Stockman, Richard F., 3,568,609.
Wyrough , David J., 3,568,415.

Air Products and Chemicals, Inc.: *See—*
Ebeling, Robert W., Jr.; and Klasson, George A., 3,569,661.

Akimoto, Hideo: *See—*
Uchida, Yasuo; and Akimoto, Hideo,3,568,582.

Akron Crane & Conveyor Company: *See—*
Myers, Daniel O., 3,568,367.

Aktiebolaget Addo: *See—*
Lydfors, John, 3,568,921.

Aktiebolaget Atomenergi: *See—*
Johnsson, Erik Borje; Tarandi, Taivo; and Luthman, Per Kurt, 3,568,379.

Albrich, James R., to Sonic-Air, Inc. Supercharger and fuel injector assembly for internal combustion engines. 3,568,650, Cl. 123-119.

Allen, Kenneth M.; and Harper, Chester H., to Allen-Harper, Inc. Means to meter granular or particulate material. 3,568,894, Cl. 222-410.

Allen, Murray W.; and Macauley, Malcolm, and Rose, Gordon A., Graphic display facility for computing. 3,569,617, Cl. 178-6.8

Allen-Harper, Inc.: *See—*
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Allied Chemical Corporation: *See—*
Whitley, Robert F., 3,568,426.

Allis-Chalmers Manufacturing Company: *See—*
Plate, John R.; Van Den Heuvel, George A.; and Mc Burnett, James R., 3,568,717.
Thiele, Tom N., 3,569,810.

Allison, Robert D.; Lafler, Robert E.; and Murphy, Joseph M., to United States Envelope Company. Process using material having adhesive releasing property for making a coupon containing envelope or the like. 3,568,398, Cl. 53-31.

Alter, Henry Ward, to General Electric Company. System for assaying solutions containing alpha-emitting isotopes using track-registration material. 3,569,703, Cl. 250-83.

Altherr, Russell George. Coupler keyslot bearing contour. 3,568,857, Cl. 213-64.

Amadasi, Claudio; and Maj, Adriano. Blocking circuit for telephone apparatus. 3,569,634, Cl. 179-18.

Amantea, Robert; Becke, Hans Werner; and Del Priore, Paul Joseph, to RCA Corporation. Double heat sink semiconductor device. 3,569,798, Cl. 317-234.

Ambassador College: *See—*
Dunlap, Clifford E., 3,568,591.

Amerace Esna Corporation: *See—*
Faroni, Charles C.; and Humphrey, John S., Jr., 3,568,746.

American Machine & Foundry Company: *See—*
Weinbaum, Hillel; and Badger, Michael H., 3,569,708.

American Optical Corporation: *See—*
Berkovits, Barouh V., 3,569,852
Booth, Eugene T., 3,569,860.
Goldberg, Herbert E.; and Polanyi, Michael L., 3,569,721.

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Ance, Louis, to Superior Continental Corporation. Splice case assembly. 3,569,608, Cl. 174-93.

Anderson, Charles G.; Avona, Vicnetn L.; and Kelly, Donald P., to United States of america, Atomic Energy Comission. Protected radioisotopic heat source. 3,569,714, Cl. 250-108.

Anderson, Gertrude. Collection device for wheel chairs. 3,568,217, Cl. 4-110.

Anderson, Jesse I.; and Parker, de Ray, to United States of America, Atomic Energy Commission. Apparatus for eliminating line twist. 3,568,946, Cl. 242-85.

Andeson Greenwood & Co.: *See—*
Weise, Irvin B., 3,568,706.

Andrews, Gordon L.: *See—*
Wade, James; and Andrews, Gordon L.,3,568,469.

Angelopoulos, Peter G.: *See—*
Neister, James T.; Pederson, Carl N.; and Angelopoulos, Peter G.,3,569,960.

Antman, Herbert S., to Edo Corporation. Heading sensing apparatus. 3,569,920, Cl. 340-5.

Appelgren, Wolter; Jorsback, Jan-Olov; and Naeslund, Gudmund, to AB Landsbygdens Frilidsbebyggelse, and Viak AB. Sewerage system for houses, particularly in rural areas. 3,568,838, Cl. 210-136.

Appleton, Arthur I. Connector assembly. 3,569,908. Cl. 339-91.

Arase, Shingo; and Briggs, James B., to Hoffman Electronics Corporation. Digital to analog servo system. 3,569,959, Cl. 340-347.

Arco Corporation: *See—*
Syson, Richard H.; and Eckert, John W., 3,568,649.

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Douglas, Robert J.; and Aregood, Robert C.,3,568,817.

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Armstrong Cork Company: *See—*
Bechtold, Oliver R., 3,568,330.
Hager, Natheniel E., Jr., 3,569,665.

Arnett Company Limited: *See—*
Delorme, Clifford, 3,568,974.

Arnold, Bruce K., to International Telephone and Telegraph Corporation. Multipiece electrical contact. 3,569,918, Cl. 35-.006/2/

Asano, Hiroaki; and Nishimura, Hideo, to Toyoda Koki Kabushiki Kaisha. Sizing device for effecting sizing over a wide range. 3,568,372, Cl. 51-165.

Ashley, James R.: *See—*
Pettit, James R.; Chaffee, David E.; and Ashley, James R.,3,569,771.

Ashman, Robert B., to Sconvill Manufacturing Company. Tire valve core. 3,568,708, Cl. 137-234.5

Ashmore, Benson, Pease & Company Limited: *See—*
Dain, Richard James, 3,568,756.

Aston, Bruno D. Cosmetic applicator with handle having integrally formed stiffener. 3,568,235, Cl. 15-244.

Aston, Bruno D. Cosmetic applicator with flexible stiffener. 3,568,236, Cl. 15-244.

Astrand, Carl: *See—*
Lunden, Tore; and Astrand, Carl,3,568,284.

Atkins, Carl E., to Wagner Electric Corporation. Capacitance-responsive circuit. 3,569,728, Cl. 307-116.

Atlantic Richfield Company: *See—*
Whiting, Jerry M., 3,568,450.

Atlas Copco Aktiebolag: *See—*
Gronkvist, Ernst Gunnar, 3,568,821.

Atwater, Wayne G.; and Saul, Sanford, to Triax Company, The. Positive locating device for load carrier in automatic warehousing system. 3,568,861, Cl. 214-16.4

Audn Corporation: *See—*
Brendle, Thomas A., 3,569,688.

Auning Corporation: *See—*
Braun, Milton L.; and Fleming, Thomas W., 3,568,317.

!Automatic! Sprinkler Corporation of America: *See—*
Cupp, Charles D., 3,568,672.

A.V. Electronics, Inc.: *See—*
Laval, Claude C., Jr., 3,568,837.

Avakoff, Edward A. Filtration head dor X-ray machine which is removalbe and rotatably supported on the X-ray collimator. 3,569,712, Cl. 250-86.

Avallone, Alfonso. Magnetically actuated safety alarm circuit. 3,569,928, Cl. 340-63.

Avco Corporation: *See—*
Wade, James; and Andrews, Gordon L., 3,568,469.

Avery Products Corporation: *See—*
Truesdell, Stanley E., 3,568,859.
Truesdell, Stanley E., 3,568,864.

Avins, Jack, to RCA Corporation. Signal translating system providing amplication and limiting. 3,569,740, Cl. 307-237.

Avona, Vicnetn L.: *See—*
Anderson, Charles G.; Avona, Vicnetn L.; and Kelly, Donald P.,3,569,714.

Awojobi, Oluyinka A.; and Dunachie, Paul M., to D-Mack Limited. Radiation measuring and device integrating. 3,569,717, Cl. 250-209.

Babcock & Wilcox Company, The: *See—*
Haley, Wilburn K., 3,568,569.

Babikyan, Jirair A., to Sanders Associates, Inc. Self-starting single phase motor. 3,569,753, Cl. 310-68.

Bachnick, Werner: *See—*
Wegener, Rolf; Bachnick, Werner; and Heitefuss, Werner, 3,569,850.

Badali, Joseph A., to Olin Corporation. Shotgun short stroke gas system. 3,568,564, Cl. 89-191.

Baddorf, David L.: *See—*
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Canale, Raymond P., to Holley Carburetor Company. Turbine engine fuel control. 3,568,440, Cl. 60-39.28

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King, Charles L., to E. I. du Pont de Nemours and Co. Trunk mat for automobiles. T884,002, 3–9–71. Cl. 161—160.

Meloon, Daniel T.: *See*—
Osborn, Robert O., and Meloon. T884,001.

Osborn, Robert O., and D. T. Meloon, to E. I. du Pont de Nemours and Co. Membrane separation. T884,001, 3–9–71. Cl. 210—23.

Wolinski, Leon E., to E. I. du Pont de Nemours and Co. Foil-foam laminar structures. T884,005, 3–9–71. Cl. 161—161.

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Wood, George F. L. Heat processable silver halide emulsions with solarization characteristics. T884,006, 3–9–71. Cl. 96—108.

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		220.148			220.142			220.130	25	:	220.091			220.089			220.122
		220.149			220.143			220.131			220.092			220.106			220.155
6	:	220.098			220.144			220.133			220.093			220.161			220.160
		220.099			220.145			220.151			220.094	34	:	220.078	39	:	220.082
		220.100	17	:	220.076			220.154			220.095			220.110			220.096
		220.117			220.083	18	:	220.077			220.162			220.139			220.101
		220.118			220.084			220.116	26	:	220.080			220.152			220.111
		220.119			220.087	21	:	220.129			220.102			220.153	42	:	220.090
		220.124			220.109			220.156			220.107	36	:	220.079	53	:	220.104
8	:	220.150			220.114			220.157			220.113			220.081			220.115
9	:	220.128			220.125			220.158			220.120			220.103	55	:	220.123
		220.140			220.126												

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10	:	T884,002	36	:	T884,001	36	:	T884,003	36	:	T884,005	36	:	T884,006	47	:	T884,004
		T884,007															

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PATENT OFFICE
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